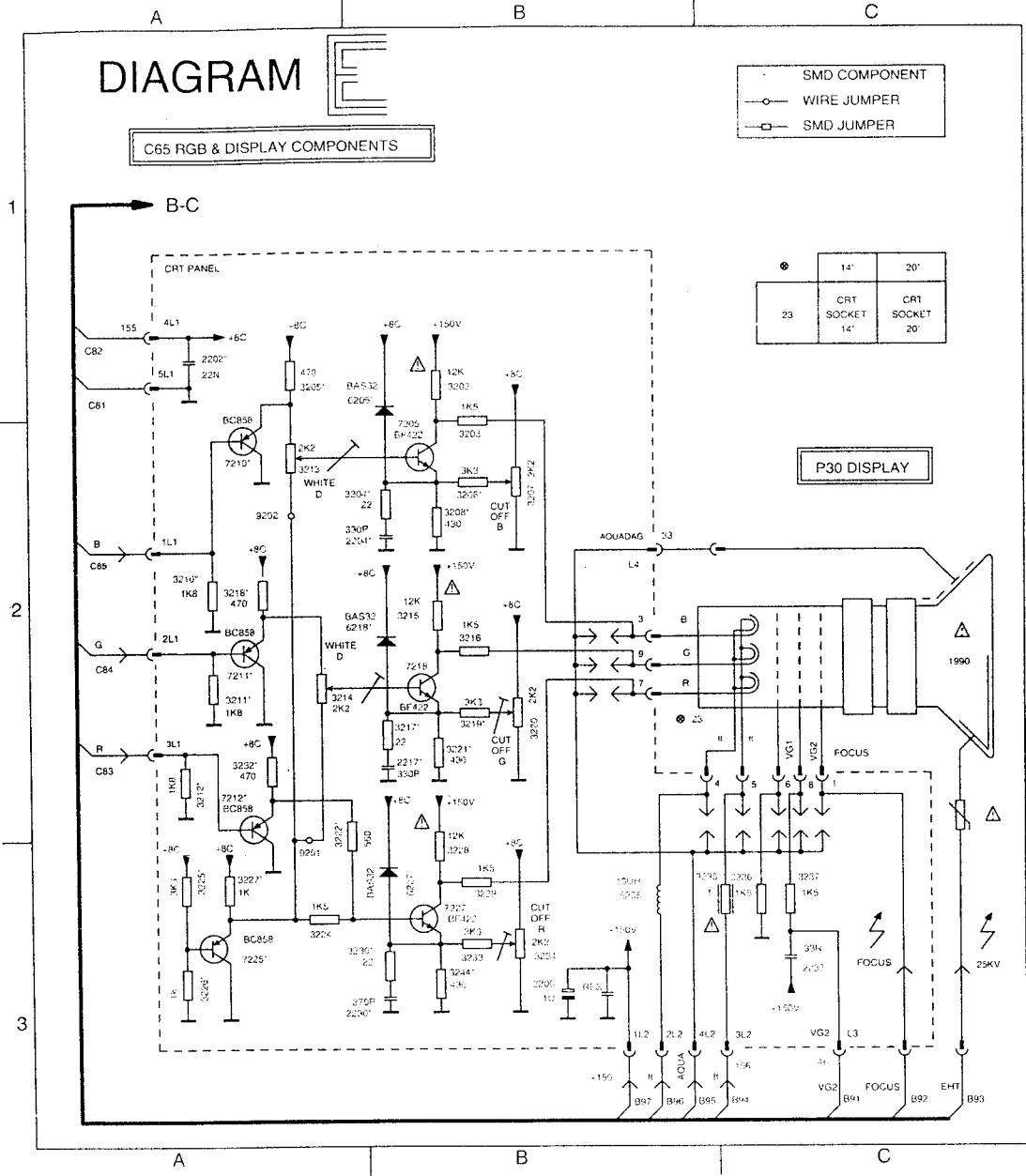

Service Manual

TV 377 AV

TV 386 VT

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•	WITH SCART+A/V	WITHOUT SCART+A/V
3691	---	10K
7691	---	BC848

④	PANEL SHORT	PANEL LONG
26	---	T SW
3666	SMD	I.H.
9603	---	JMP

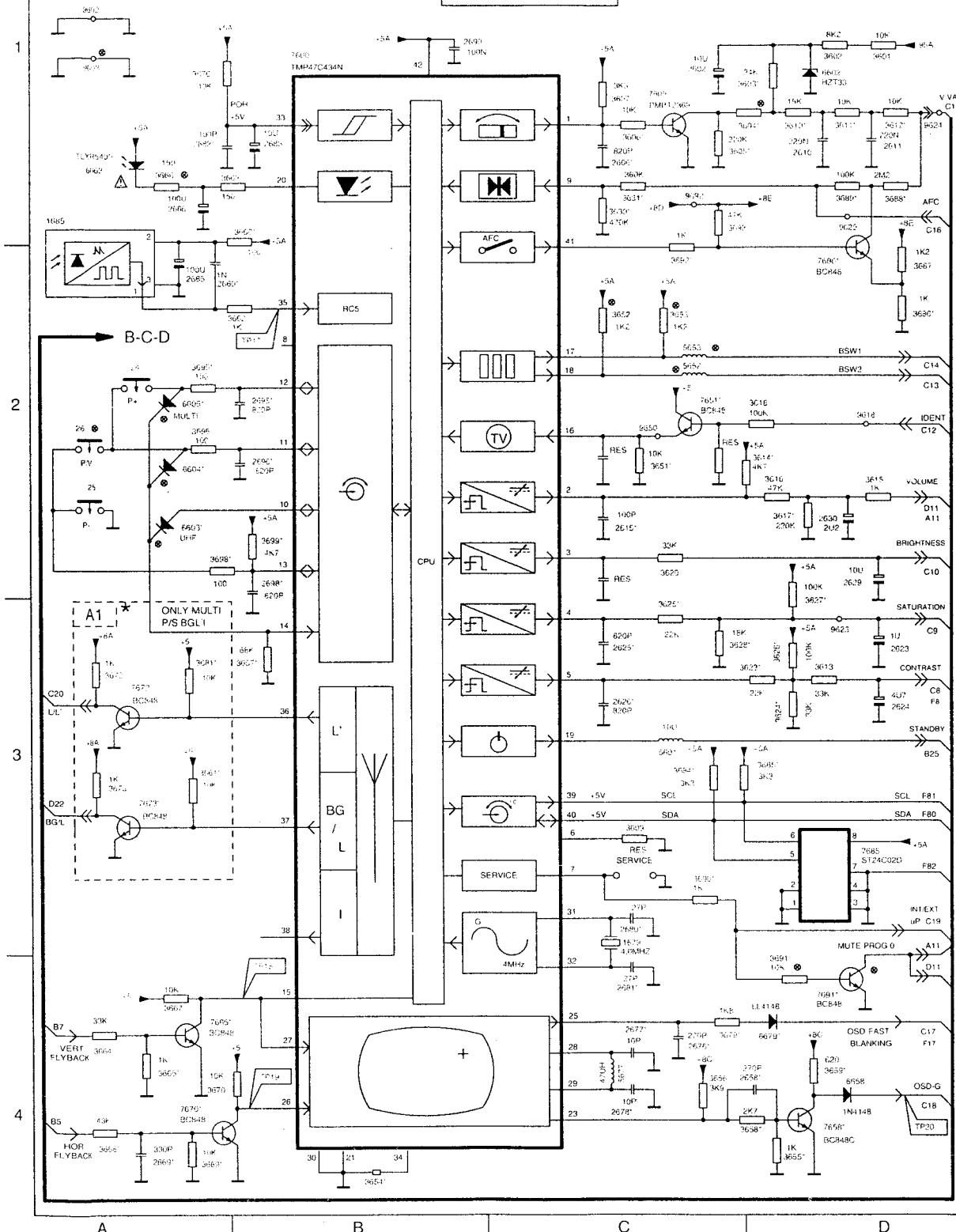
⊗	TXT	MULTI TXT
6604	LL4148	--
6605	--	LL4148

④	PAL-BG	PAL-I	PAL/SECAM BG-DK	PAL/SECAM I-BG-LL
3604	150R	150R	150R	33R
5652	10uH	...	10uH	10uH
5653	10uH	...	10uH	10uH
6603	...	LL4148	...	...
6604	...	...	...	LL4148
6605	...	...	...	LL4148

DIAGRAM A

- SMD COMPONENT
- WIRE JUMPER
- SMD JUMPER

G30 CONTROLS



Description IC7015/6A/6B/6C/6D/6E/6F (TDA836X)

IC7015 (TDA836X) is a single-chip video processor with built in IF-detector, luminance and chrominance separator, PAL chroma decoder, RGB processing, horizontal & vertical sync. processor, FM sound-decoder.

IF (INTERMEDIATE FREQUENCY) DEMODULATION (IC7015/6A)

IC7015/6A contains the IF amplifier and the IF detector. The 38.9 MHz IF signal is present at the output pin 17 of the tuner (33.4 MHz for a signal according to the SECAM L' system).

Bandpass filter: The IF bandpass characteristic is determined by the bandpass of the SAW (Surface Acoustic Wave) filter 1015.

For PAL BG sets a SAW filter with 5.5 MHz bandwidth is used (33.4 to 38.9 MHz).

For PAL I sets a SAW filter with a bandwidth of 6.0 MHz is used (33.4 to 39.4 MHz).

For PAL BG/SECAM BG/L' sets a SAW filter with 6.0 MHz bandwidth is used to enable BG/L' reception.

For LL' reception BG/L' is "high", D6014 conducts and so the 33.4 MHz is tuned at 33.4 MHz (33.4 to 38.9 MHz).

For BG/LK reception BG/L' is "low". D6014 does not conduct. With C2013 the bandpass filter is tuned at 33.4 MHz (33.4 to 38.9 MHz).

For BG/LK reception BG/L' is "low". D6014 does not conduct. With C2014 (32.9 to 38.9 MHz).

Demodulation and AGC: After the bandpass filter the IF signal is supplied to the IF-detector (IC7015/6A pins 45 and 46). This IC7015/6A is suitable for both negative (BG/LK) and positive (LL') modulation controlled by the BG/L switching signal ("high" for LL' positive modulation, "low" for BG/LK negative modulation) at pin 1 IC7015/6F (pin 1 IC7015/6F is at DC level input pin for positive/negative switching of IC7015/6A). This control also determines whether the AGC circuit controls at the low white level (positive modulation) or at the top sync level (negative modulation).

The high-frequency AGC voltage is available at pin 47. The take over level of the high-frequency (delayed) AGC control can be set at pin 49 by means of R3021. For switching to different IF for the SECAM L' system (33.4 MHz) the demodulation reference circuit 5040 at pins 2 and 3 IC7015/6A is switched by switching signal L'.

For BG/LK reception L' is "low". D6042 conduct and so coil 5043 is connected in parallel to 5040. The circuit is tuned to 38.9 MHz.

For L' reception L' is "high". D6042 conduct and so coil 5043 is connected in parallel to 5040. The circuit is tuned to 33.4 MHz (33.4 to 38.9 MHz).

Note: For sets with LL' reception L5040 is tuned at 33.4 MHz, for sets without LL' reception L5040 is tuned at 38.9 MHz (33.4 to 38.9 MHz for PAL I only sets).

Automatic Frequency Control (AFC) signal at pin 44 is obtained from the reference signal of the IF-detector and the control is modified internally in IC7015/6A for positive or negative modulation. C2037 smoothes the AFC voltage.

SOURCE SELECT, LUMINANCE AND CHROMINANCE SEPARATION (IC7015/6B)

Sound: The baseband CVBS signal of pin 7 IC7015/6A (nominal amplitude of 2V_{pp}) also contains the 5.5 or 6.0 MHz FM sound signal (FM intercarrier sound). This sound signal is filtered out with a 5.5 MHz

(6.0 MHz) I/L ceramic filter (1032 and/or 1033). **Source select:** The CVBS signal is now fed to pin 13 IC7015/6B to the source selector switch in IC7015/6B. Pin 16 INT/EXT = 0V gives internal CVBS (pin 13), pin

16 INT/EXT + 8V gives external CVBS (pin 15) (external signal SCART CVBS IN from the CVBS IN cinch or pin 20 SCART-connector). **Luminance and chrominance separation:** chrominance signal is filtered out

(-20dB) by a luminance notch filter which is internally calibrated at the subcarrier frequency (4.43 or 3.58). The IDENT status signal is coming from pin 14 IC7015/6B. In case of no horizontal sync (so no signal

detected) by the sync processor IC7015/6E, pin 14 IC7015/6B is made "low". TS7651 does not conduct so pin 16 of the uC is "low", in case horizontal sync detected (so signal detected) pin 14 IC7015/6B is "high".

TS7651 conduct and pin 16 of the uC is "high". The IDENT signal is internally fed to IC7015/6D ensuring stable OSD even without transmitter signal (IC7015/6D can be switched to different time constants).

IC7015/6D searches for PAL and IC7250 searches for SECAM.

CHROMINANCE DECODING (IC7015/6C)

CVBS is extracted from the baseband CVBS signal from the IF-detector via crystals 1032 and/or 1033. PAL (and NTSC if applicable) chroma decoding inside IC7015/6C, SECAM chroma decoding inside IC7250.

Inside IC7015/6C the PAL (or NTSC) chroma signal is fed via amplification and a burst demodulator to the R-Y and B-Y demodulator. (PAL or NTSC processing is determined automatically by the burst demodulator

inside IC7015/6C). The 4.43 MHz reference crystal for chrominance demodulation in IC7015/6C is present at pin 35 of IC7015/6C.

Pin 27 should be 5V (via R3280) to force IC7015/6C in the PAL/SECAM mode, by then IC7015/6C is in PAL decoding mode and via pin 27 feeds through the chroma signal to the SECAM chroma decoder IC7250.

IC7015/6C searches for PAL and IC7250 "knows" whether a PAL or a SECAM signal is detected:

Via a bidirectional communication line between pin 32 of IC7015/6C and pin 1 of IC7250 both IC7015/6C and IC7250 "know" whether a PAL or a SECAM signal is detected:

- On AC level there is a 4.43 calibration for calibration of the PLL and chroma cloche filter of IC7250.

- On DC level there is a SECAM or PAL switching line enabling automatic selection of IC7015/6C or IC7250 to supply R-Y and B-Y to the delay line IC7271.

* If IC7015/6C has detected a PAL signal, Voin 32 is made 1V. By then the demodulated R-Y and B-Y at output pins 30 and 31 of IC7015/6C are not fed to the delay line IC7271.

* If IC7015/6C has not detected a PAL signal, Voin 32 is made 5V. By then the demodulated R-Y and B-Y at output pins 30 and 31 of IC7015/6C are not fed to the delay line IC7271.

* If IC7250 has detected SECAM "Voin 1 IC7250 becomes "low", sinking typical 150 uA from the 5V from pin 32 IC7015/6C. Only in case the sinking current at pin 32 IC7015/6C is typical 150 uA, only by then

IC7015/6C "knows" IC7250 has detected SECAM. The SECAM demodulated R-Y and B-Y are fed to the delay line IC7271 via output pins 9 and 10 of IC7250.

IC7015/6C "knows" IC7250 has detected SECAM. The SECAM demodulated R-Y and B-Y are fed to the delay line IC7271 via output pins 9 and 10 of IC7250.

RGB DEMATRIXING (IC7015/6D)

RGB-dematrixing dematrices the -R(Y), -B(Y) and the Y signals to RGB signals: the sandcastle pulse coming from the IC7015/6E synchronises RGB dematrixing and suppresses the RGB signals during line and

frame flyback.

Control by the uC for contrast, brightness and saturation (0V5 to 4V5).

RGB-source select switches between internal RGB and external RGB (OSD or SCART) via pin 21 of IC7015/6D (via resp OSD FAST BLANKING from OSD generator and FAST BLANKING from SCART or uP

INT/EXT from uC).

HORIZONTAL SYNCHRONISATION (IC7015/6E) diagram B

Start up of the hor. oscillator via +1A gives start up current into pin 36; if voltage at pin 36 5V the hor. oscillator starts running at approx. 25kHz and only when IC7015 supply pin 10 = 8V the line frequency

changes to 15625 Hz. **Hor. sync. separator:** separates hor. pulses out of CVBS and so synchronises the free-running hor. sawtooth generator. Both the line and frame frequencies are internally locked to the chroma

oscillator on pin 35 IC7015/6C. **Hor. oscillator sawtooth:** is converted in square wave voltage with variable duty cycle (pin 37). **Hor. flyback pulse:** at pin 38 compares phase of flyback pulse with phase of the hor.

oscillator; if phase not correct the duty cycle of hor. oscillator will be adjusted. **Time constant of the sync. circuit:** automatically determined by IC7015/6E. **Pin 38:** is both sandcastle output and hor. flyback input.

Selection automatically determined by the input current (sandcastle a few uA, flyback 100-300 uA determined by R3371). **Amplitudes of sandcastle pulse:** burst 5V3, line blanking 3V, frame blanking 2V. At standby

(STANDBY "low") TS7580 blocks and TS7581 conducts and so the line is shut down at stand by.

VERTICAL SYNCHRONISATION (IC7015/6E) diagram B

Vert. sync. separator separates frame sync. pulses from CVBS signal and synchronises frame oscillator. IC7015/6E compares phase of flyback pulse with phase of sawtooth at pin 42 (from external RC network); if

phase not correct the duty cycle of frame oscillator will be adjusted. **Preamplifier in IC7015/6E:** amplifies sawtooth (pin 43 of IC7015/6E). **Vert. sync. frame correction:** is realised for high beam currents: if beam current

increases (more white), EHT decreases so picture will become too big. BCI and so BCI' decreases for increasing beam current (diagram C) and the picture will be corrected.

SOUND DETECTION (IC7015/6F) diagram B

There are two audio paths: for the BG, I and DK systems FM modulated intercarrier sound (sound extracted from baseband CVBS from IF detector), for the LL' systems AM modulated quasi-split sound (sound

extracted directly from the tuner).

FM demodulation: For FM modulated sound the sound signal is filtered through filter 1135 or 1136 from the baseband picture signal. For BGDK or BGILL' sets the switching signal BG/L is used to select the correct

crystal.

* For (or DK) reception BG/L is "low", D7170 does not conduct, D6170 conduct and so crystal 1136 (6.0 MHz for I and 6.5 MHz for DK) is switched parallel to 1135.

* For BG reception BG/L is "high", TS7170 conduct, D7170 does not conduct and 1136 is not switched in parallel to 1135 (5.5 MHz only).

For PAL BG or PAL I only sets only 1135 is used (resp 5.5 MHz or 6.0 MHz). FM-mono sound demodulation takes place in IC7015/6F. No adjustment required for BG or I demodulation as automatic PLL tuning

is determined by the source selection switch in IC7140. C2126 and 2127 are AGC related storage capacitors.

The demodulated signal at pin 6 of IC7125 is supplied to the source selection switch in IC7140. C2126 and 2127 are AGC related storage capacitors.

Source selection: INT/EXT is "low" for internal and "high" for external. This signal is made from uP INT/EXT and pin 8 of the scart. If one of these 2 signals is "high" external is selected, BG/L is "low" for FM sound

(BGDK) and "high" for AM sound (LL').

* Top switch in IC7140 selects between AM sound (pin 5) and EXT sound from SCART - AV (pin 3) by pin 9 INT/EXT. The output of this selector (pin 4 IC7150) is fed to input pin 6 of FM demodulator IC7015/6F.

Here selection is made between FM sound and "pin 5 AM or EXT sound" by pin 16 IC7015/6B INT/EXT.

Middle switch in IC7140 selects between AM (pin 1) and FM sound (pin 2) for SCART AUDIO OUT by pin 10 (BG/L is "high" for AM pin 1, "low" for FM pin 2).

Bottom switch in IC7140 connects -8 to pin 1 IC7015/6F to switch the IF-detector and AGC (both IC7015/6A) to positive modulation for SECAM LL' (BG/L so pin 11 IC7140 is "high" for AM LL' positive modulation).

so pin 13 to -8).

Ant. D100: At switching on the set C2183 is "high", TS7183 conducts and so mutes the output amplifier IC7187. As soon as C2183 is charged anode C2183 is "low", TS7183 stops muting.

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

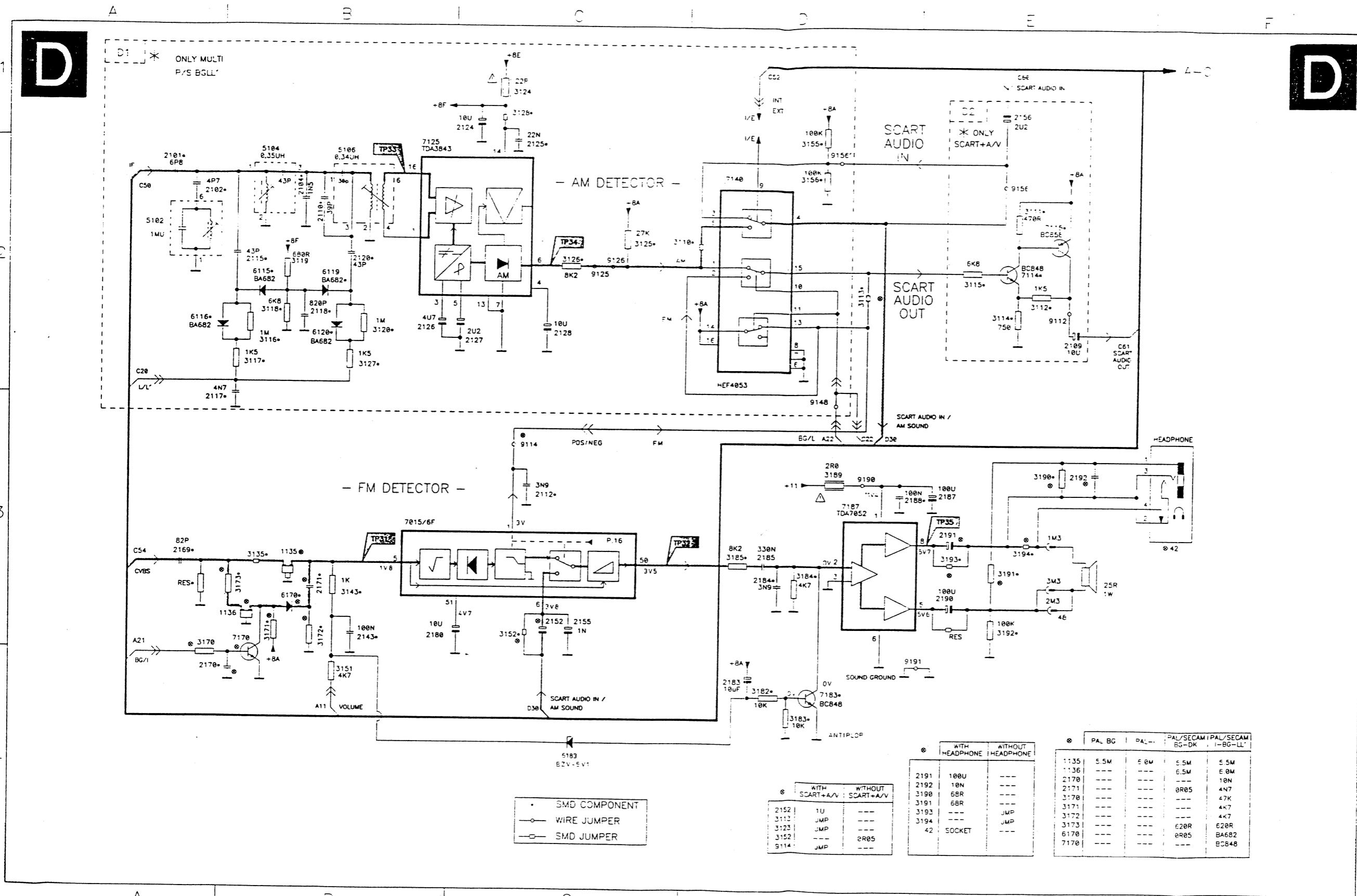
At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

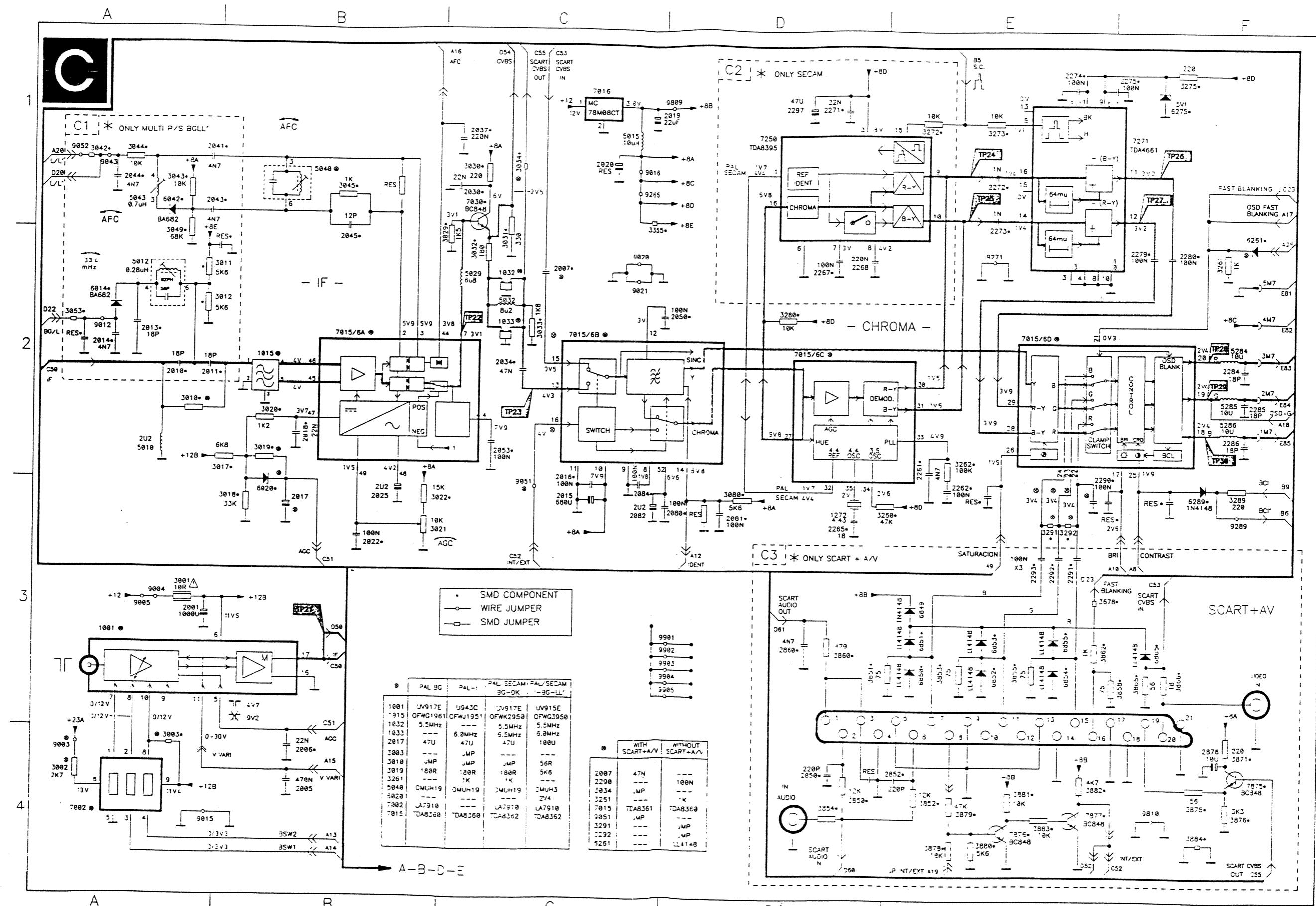
At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C2183 becomes approx -8V DC. By then the DC volume control signal VOLUME is shorted via zener D6183, so IC7015/6F is muted

At switch off the set the -8A drops very fast. As C2183 is still charged, the anode of C

Sound / Sonido / Suono

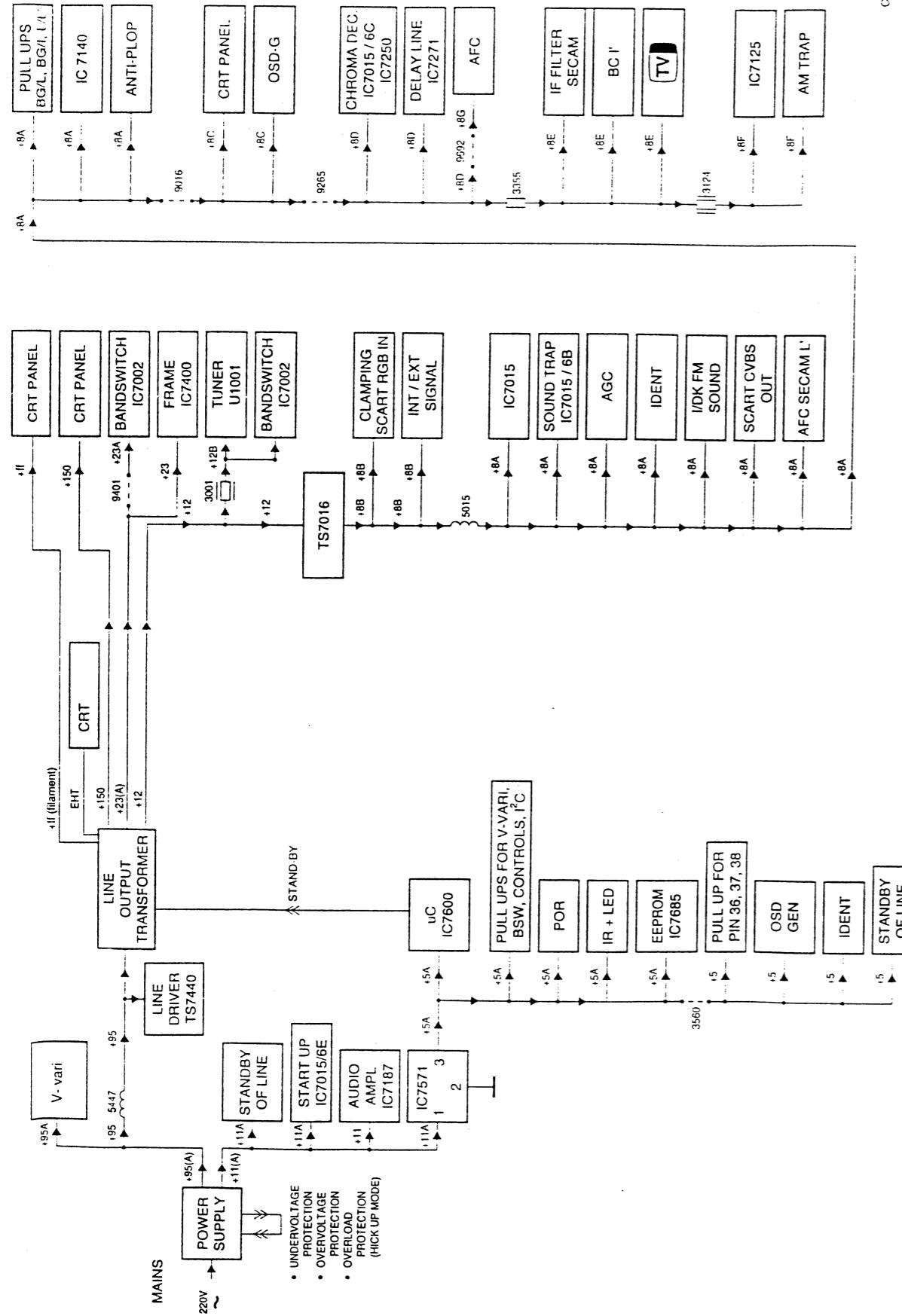
Sound / Sonido / Suono





Block diagram power supply

Power supply block diagram



9. Directions for use

Installation

Follow the instructions very carefully and step by step.

- The circle in front of a sentence indicates that you have to do something.
- The arrow in front of a sentence indicates the result of what you have done.
- Text in *italic* like this one indicates help information.

Place the TV on a solid base. Leave at least 5 cm around each side of the TV for ventilation.

The TV can only operate at a mains voltage of 220-240 V - 50 Hz; consult your dealer if the mains supply is different.

- Connect the TV tightly to the mains supply socket.
- Connect the aerial (indoor or outdoor) plug to the "A" socket on the back of the TV.

Make sure that the connection facilities to any TV installed in your house are in good condition. Only use good quality aerial connectors and cables. The aerial plugs should be tightly connected.

Small screen TVs (14" 34 cm, and 15" 36 cm) are equipped with a high performance indoor aerial, nevertheless in some circumstances specific regions or if surrounded by high buildings reception problems could occur. Further improvement of reception could be obtained by:

- Rotating or varying the angle of the aerial.
- Using other aerial executions.
- Connecting your TV to an outdoor aerial.

Remote control

- Slide down the battery cover.
- Insert the batteries, as indicated on the remote control.
- Replace the battery cover.

The batteries supplied with the remote control of your TV do not contain the heavy metals mercury and cadmium. In many countries flat batteries may not be disposed of with your household waste. Please ensure that batteries are disposed of in accordance with any local regulations.

Switching TV on

- Press on the front of the TV.
- The TV is switched on.
- Is the TV still switched off? Then the TV is on Stand-by.
- Press P - or + or a digit button on the remote control, or - or + on the TV, to switch on the TV.

Stand-by

- By pressing on the remote control you can temporarily switch the TV off.
- Press P - or + or a digit button on the remote control, or - or + on the TV, to switch on the TV again.

Automatic switch off

If after a period of 15 minutes no serial signal is received, the TV automatically switches to Stand-by.

Televisions consume energy in the stand-by mode. Energy consumption contributes to air and water pollution. We advise you to switch off your TV overnight instead of leaving it on stand-by. You save energy and the picture tube is demagnetised which supports good picture quality.

Storing TV channels

39 TV channels can be stored on program numbers. Write down the TV channels and the assigned program numbers while storing.

Follow carefully steps B, C, D.

- Press the button.
- The current program number is displayed on the screen.

- Press to start the search.
- The TV automatically searches until a TV channel is found.
- If you want to continue searching for a specific TV channel then press again.

- Press P - or + or one or two digit buttons to select the program number (1 to 39) where you want to store the TV channel.
- The selected program number is displayed on the screen.

Program number 0 is not available to store TV channels.

- Press the button to store this selection.

Repeat steps A, B, C, D, until all the TV channels you require have been stored on program numbers.

Storing TV channels can be stopped by pressing first P + then on the remote control.

Auto Programming

The Auto Programming function can be used to find and store all available channels quickly. Channels are stored on program numbers in the same sequence as they are found.

After Auto Programming is started, the TV starts searching for a channel. If a channel is found, it will be automatically stored on program number 1. Searching will start again automatically. If another channel is found, it will be stored on program 2, etc.

At the end of the Auto Programming cycle the TV switches to program 1.

- Press the button.
- Press the button longer than 4 seconds to start the Auto Programming.

The Auto Programming can be stopped by pressing first P + then on the remote control.

Operation

On Screen Display

The On Screen Display information allows you to see the program number on which a TV channel is stored, the sleep-timer status and a moving bar if the volume is adjusted.

- Press to display information on the screen.
- Press again to switch off information.

Selecting TV channels

- Press P - or + or press one or two digit buttons on the remote control to select a program number from 1 to 39. Press one digit button. To select a program number from 10 to 39 you must press two digit buttons in less than 4 seconds.
- or

- Press - or + on the TV.

You cannot store TV channels on program number 0. If you press the program number 0 a black screen appears.

Volume control

- Press or on the TV.

A bar is displayed on the screen.

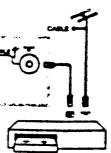
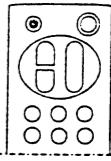
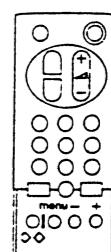
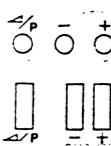
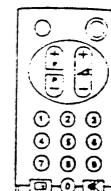
- Press - or + to adjust the volume.
- 4 seconds after you have adjusted the volume, the - and + buttons will work as Program - and + again.

or

- Press or on the remote control.

- Press to switch off the sound.

- Press again or to switch on the sound.



Menu on screen

When you switch on your TV, the picture and sound settings have certain values. These values are initially stored by the factory. Using the menu on screen you can change these values. If you store these values the TV will switch on with your stored picture and sound values.

- Press MENU.
- BRIGHTNESS appears, adjust the brightness by pressing - or +.
- Press MENU again.

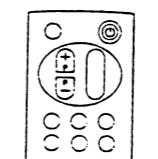
- CONTRAST appears, adjust the contrast by pressing - or +.
- Press MENU again.

- CLOUR appears, adjust the colour by pressing - or +.
- Press MENU again to switch off the menu.

- Adjust the volume by pressing - or + on the remote control.

- If you want to store the settings press twice the button on the remote control.

If you want to leave the menu, for example after changing the contrast setting, you can either wait approximately 15 seconds or continue to press the MENU button until the menu disappears from the screen.



Sleep-timer

With this feature you can select a time period after which the TV switches automatically to stand-by mode.

- Press on the remote control until the required time after which the TV should switch off is displayed on the screen. This time period can be set in steps of 15 minutes starting from 90 minutes downwards. The count down starts immediately. You can see the remaining time by pressing on the remote control.
- During the final minute of the selected time period, the seconds remaining are automatically shown on the screen.
- At the end of this time period the TV switches to stand-by mode.

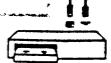
If you want to stop the "Sleep-timer" press until the selected time period displayed on the screen is "00".

Peripheral connections

Aerial connection

You can connect your videorecorder or other equipment via the serial connection on the back of the TV.

- Unplug the serial plug from your TV and insert it into the serial input "A" of your equipment.
- Connect another serial plug to the output "B" of your equipment, connect the other side to the serial input "A" of your TV.
- Switch on your equipment.
- Check in the handbook of the particular equipment to see what the test signal looks like.
- Now, refer to the section Storing TV channels to search for and store the signal on a programme number. After that, you can receive signals from your equipment on this programme number.



Tips

To clean the TV

Clean the TV using a slightly damp chamois leather.

Never use aggressive cleaning agents.

Poor or no picture:

Are the plugs tightly connected to the serial socket and are the connection facilities to the other installed TV in good condition?

Do you use good quality serial connectors and cables?

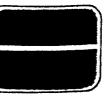
If an indoor serial is used, refer to the section "Installation" to improve the reception.

No solution:

Switch your TV off and on again with the button. Never attempt to repair a defective TV set yourself.

Switch off the TV and call your dealer or TV-technician when nothing helps or when:

- A white horizontal stripe appears across the whole screen.
- The red lamp below the screen starts blinking when no buttons are pressed on the remote control.



Environmental information

Your TV contains material which can be recycled and reused. At end of life specialised companies can dismantle the discarded TV to concentrate the reusable materials and to minimize the amount of materials to be disposed of.

Description TMP47C434N

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Controls

DESCRIPTION TMP47C434N (all pins described from left up corner anti-clockwise)

- +5 (pin 42) and Power On Reset (POR, pin 33):** The +5 supply of the microcomputer (μC) is at pin 42. Via the POR at pin 33 the μC will not initialize before C2683 at pin 33 is charged up to +5V (see description power supply). The initialization will take place and the μC will start up.
- LED (pin 20):** The LED at pin 20 will be red in the stand-by mode and will flash during RCS reception or error messages.
- RC5 (pin 35):** The commands transmitted by the remote control are received by the infrared receiver 1685 and applied to pin 35 of the μC.
- Operating keys and options diodes (pins 10-11-12-13-14):** There are 3 operating keys connected to pins 10-11-12-13 of the μC. These pins are read every 16 msec. The given command can be determined by giving one of the pins a 'low' level and reading the other pins whether they are 'low' or not.
- By means of the option diodes between pins 10, 11, 12 and pin 14, the μC reads the system facilities of the unit during the initialization phase. For PAL BG and PAL BG/SECAM BGDK no diodes are needed. For PAL I (UHF only) diode 6603 is present, for PAL BG SECAM BGLL diode 6604 is present and for PAL BGI SECAM BGLL diode 6605 is present.**
- System switching voltages BG/L - L/L - BG/I (pins 36-37-38):** Pins 36, 37 and 38 are used for system switching in the sound and video decoding part.
- The signals at pins 36, 37 and 38 are inverted and set to the correct level by resp TS7672, TS7673 and TS7674. By then they are called status lines L/L', BG/L and BG/I (see table).

SYSTEM	L/L'	BG/L	BG/I
BG	L	L	H
I	L	L	L
DK	L	L	L
L	L	H	H
L'	H	H	H

On Screen Display (OSD) (pins 15-27-26-23-29-28-25): Using the OSD generator, information is given on the screen about the tuned band (VHF or UHF), the position in the tuning range (tuning bar), system selected, sleep timer, program number and the adjustment of the various picture and sound settings.

In order to synchronize the OSD information with the picture signal, the VERT FLYBACK signal is added inverted to pins 15 and 27 and the HGT FLYBACK signal to pin 26. The OSD generator is controlled by C2677, C2678 and L5677. The OSD FAST BLANKING signal is available at pin 25. The green OSD-G picture signal is coming from pin 23.

4-MHz oscillator (pin 31-32): The frequency of the oscillator (4 MHz) of the μC is determined by a crystal on pins 31 and 32.

SERVICE, uP INT/EXT and MUTE PROG 0 (pin 7): If during mains switch on pin 7 is shorted to earth, the Service Default Mode is activated (see chapter 8).

For sets with SCART + AV pin 7 is also used for internal or external audio + video switching. If pin 7 is 'high' (via signal line uP INT/EXT) and/or pin 8 from SCART is 'high', then switching line INT/EXT is 'high' (via TS7876 and 7877, see diagram C).

If INT/EXT is 'high', IC7015/6B (via pin 16) and IC7140 (via pin 9) will select external audio + video.

For sets without SCART + AV pin 7 is also used for muting audio and video at program 0. At program 0 pin 7 will be 'high' and so the DC volume control signal is shorted by TS7691. Further via signal line uP INT/EXT and D6261 the video controller IC7015/6D will select external RGB. This external RGB will be muted (dark screen) via R3291, R3292 and C2990 (TS7691, D6261, R3291, R3292 and C2990 are only present in sets without SCART + AV).

EEPROM Memory and I²C (pins 39-40): The μC is connected to a non-volatile memory IC7685 (EEPROM) via the I²C bus. The PP and programme data are stored in this memory. The system has the facility to store 39 preferred transmitters together with their tuning, band voltage and system data.

Stand-by (pin 19): The STANDBY switching signal is present at pin 19 of the μC. In case the status signal STANDBY is 'low' the line output circuit is switched off.

Picture and sound settings (pins 2-3-4-5): There are 4 analog settings available: volume (pin 2), brightness (pin 3), colour saturation (pin 4) and contrast (pin 5).

The RC networks are used to make a DC voltage level from the pulse width modulated output signal.

A certain adjustment of these settings can be preprogrammed in the memory as personal preference for all programs at once (PP). Sound suppression (mute) takes place internally in the μC during the automatic transmitter search or when the received signal is interrupted (detected via the IDENT signal at pin 16).

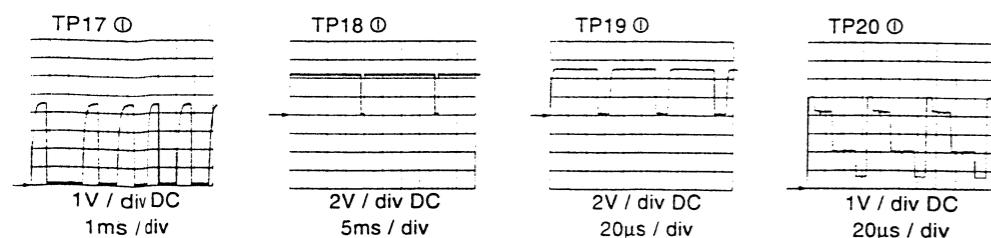
Tuning (pins 16-17-18-41-9-1): The tuning system is of the VST (Voltage Synthesized Tuning) system type. This system is based on the principle that tuning to a transmitter in the tuner is done via a linear variation of the tuning voltage (V-VARI). This tuning voltage (OV2 to 5V) is available at pin 1 of the μC and is set to the correct level (OV to 33V) using TS7605 and the +95.

The AFC (Automatic Frequency Control) signal from the IF-detector is added to the tuning voltage V-VARI via R3689 and R3688 to compensate tuner drift.

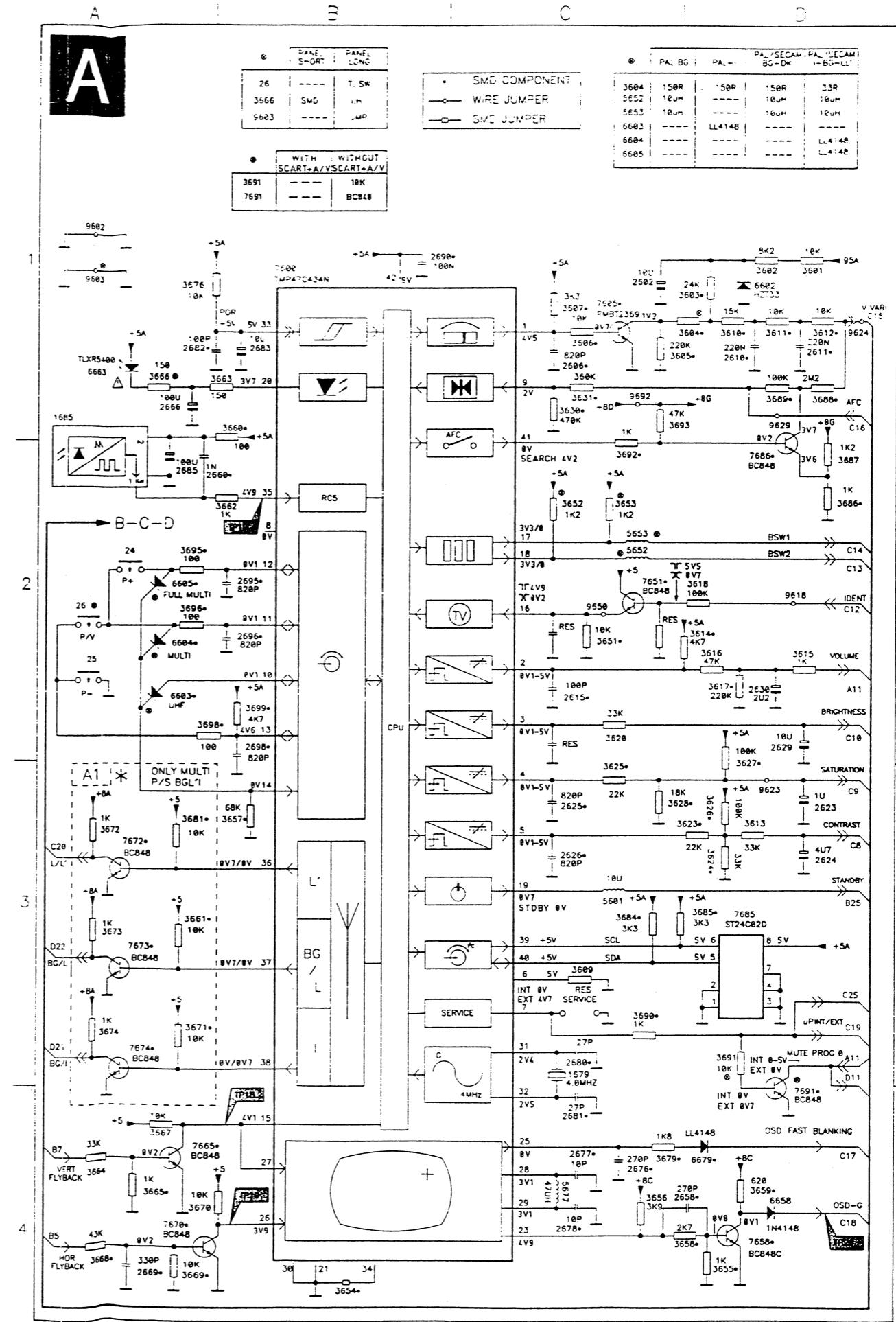
During transmitter search pin 41 is 'high' and as a result the AFC voltage will not be added to the V-VARI.

If during the transmitter search an IDENT signal is received at pin 16, the μC will check via the input pin 9 whether the tuning is correct and whether the AFC can be switched on again.

The μC has two switching voltages on pins 17 and 18 for band switching of IC7002.

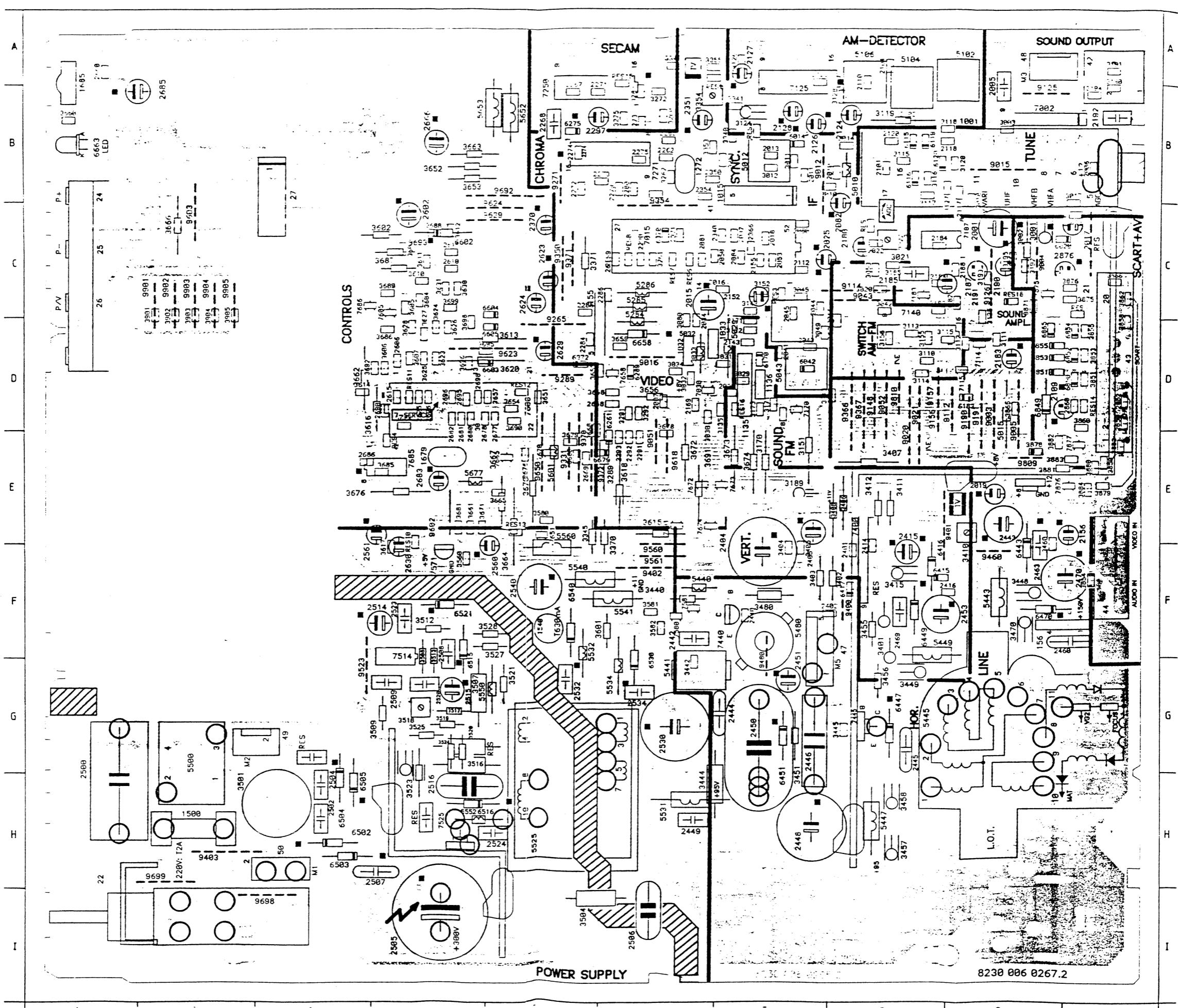


At RC5 reception



Tu

115 B7	2460 F10	3195 C8	3676 E6	6649 D5
135 D7	2462 F6	3290 B6	3675 E5	6850 D10
2469 F6	3281 C6	3681 E4	6851 D9	
36 D7	2470 F10	3262 B6	3684 D4	6852 D10
2500 G1	3272 B6	3685 E4	6853 D4	
100 H2	2502 H3	3273 B6	3686 D4	6854 D10
140 FS	2504 H3	3275 B6	3687 C4	6855 D5
79 E4	2505 H4	3280 B6	3688 C4	6865 D5
125 A1	2506 F6	3285 E6	3689 C4	7002 A9
201 C9	2507 H4	3291 D6	3690 D5	7015 C6
205 A9	2508 F2	3292 D6	3691 E6	7030 C6
206 B10	2509 G4	3294 B7	3692 D4	7114 D5
207 D6	2510 F4	3295 B7	3693 C4	7115 D5
210 B8	2515 G4	3342 A6	3695 D5	7125 B7
211 B7	2516 H4	3345 E5	3698 D4	7140 D8
212 B7	2520 G4	3351 B7	3698 D4	7170 D7
213 B8	2523 F4	3352 B6	3699 C4	7183 D7
215 C6	2524 H5	3354 B6	3852 E1	7187 C9
216 C7	2530 G6	3355 A6	3853 D10	7250 B5
218 C7	2532 D5	3370 E6	3854 F10	7271 F4
219 E9	2534 G6	3371 C5	3855 D10	7400 E6
222 C7	2540 F5	3401 F6	3855 C10	7440 F7
230 D7	2560 F5	3402 F6	3856 E10	7445 G6
234 D6	2561 F4	3403 F7	3860 D10	7514 F4
237 C7	2602 C4	3404 F7	3862 C10	7525 H4
241 D7	2606 D4	3405 F7	3865 D9	7571 F4
243 D7	2610 C4	3406 E8	3866 C6	7580 F6
244 C7	2611 C4	3407 E8	3871 C8	7581 F6
245 C7	2615 D4	3408 E8	3875 C10	7600 D5
250 C5	2623 C5	3410 F9	3876 C10	7605 C4
252 C7	2624 C5	3411 E8	3878 E9	7651 E4
253 C7	2625 D4	3412 E8	3879 E10	7665 E5
258 C7	2626 D4	3415 F8	3880 E10	7670 E5
261 C6	2629 D5	3440 F6	3881 E10	7672 E4
262 C8	2630 F4	3442 G6	3882 E10	7673 E7
264 C7	2658 D6	3444 H7	3883 E10	7674 E6
266 B8	2660 A1	3445 G8	3884 E10	7685 E4
267 B8	2666 B4	3448 F9	3901 C2	7686 E4
270 A8	2669 E5	3449 G8	3902 C2	7691 E4
271 C10	2675 E5	3451 G7	3903 C2	7875 C8
279 D9	2677 D5	3455 F8	3904 C2	7876 E10
281 A8	2678 D4	3456 G8	3905 C10	9003 D9
282 C7	2680 D4	3457 H8	43 D10	9004 C9
285 C7	2681 D4	3458 H8	5010 B8	9005 D6
286 C7	2682 D4	3460 F9	5012 B7	9012 B7
287 C8	2683 D4	3476 F9	5015 D9	9015 A9
288 C7	2684 D4	3480 F7	5029 D7	9016 D6
289 C8	2685 D4	3504 I5	5032 D6	9020 D8
292 C7	2686 D4	3507 G4	5043 D7	9021 D8
296 B7	2694 D4	3508 F4	5102 A9	9042 C8
297 A7	2695 F4	3509 G4	5104 A8	9051 E6
298 B7	2850 D10	3512 F4	5106 A8	9052 D8
299 C7	2852 D10	3513 F4	5284 D6	9112 D9
300 C7	2860 D10	3516 G4	5285 C5	9114 C8
301 C7	2876 C9	3517 G4	5286 C6	9125 A9
302 C9	3001 C9	3518 G4	5440 F6	9126 C9
303 C9	3002 C9	3519 G4	5441 G6	9148 D8
307 D7	3003 B9	3520 G4	5443 F9	9156 D8
311 B7	3010 B8	3521 G5	5445 G8	9157 D8
318 C8	3011 B7	3523 H4	5447 H8	9190 D9
319 D9	3012 B7	3524 G4	5449 F8	9191 D9
324 C7	3017 B10	3525 G4	5480 F7	9265 D5
325 C8	3018 B9	3527 F5	5500 G2	9271 B5
327 C9	3020 C7	3528 F5	5500 G5	9288 D5
328 C8	3021 C8	3560 F4	5525 H5	9331 E5
329 C9	3022 C7	3580 E5	5531 H6	9350 C5
331 C9	3024 D6	3581 F5	5532 F5	9354 C6
332 A10	3030 D6	3582 F6	5534 G6	9366 D8
336 B6	3032 D6	3602 C4	5540 F5	9367 D8
337 B6	3033 D6	3603 C4	5541 F6	9370 E5
338 B5	3034 D6	3604 C4	5552 H4	9371 C5
340 C7	3042 C7	3605 C4	5560 F4	9372 E5
348 B5	3043 D8	3606 D4	5601 E5	9400 F8
371 B5	3044 D8	3607 D4	5652 B5	9401 E8
372 B5	3045 C7	3612 C4	5653 B5	9402 F6
373 B6	3049 D7	3613 D5	5677 E4	9403 H2
374 B5	3053 C7	3614 D3	6014 B7	9480 F7
375 B6	3080 D6	3615 E6	6020 C8	9523 G3
376 B6	3110 D8	3616 D4	6042 D7	9560 F6
379 B6	3111 D8	3617 E4	6115 B8	9561 F6
380 B6	3112 D9	3618 E6	6116 B8	9602 E4
384 D5	3113 D8	3622 D5	6119 B8	9603 C2
385 C5	3114 D8	3623 D4	6120 B8	9618 E6
386 C6	3115 D8	3624 D4	6183 D9	9623 D5
391 E6	3116 B8	3626 D4	6261 E6	9624 C5
392 E6	3117 B8	3627 D4	6289 D6	9650 E5
393 E6	3118 B8	3628 D4	6372 D5	9692 B5
397 B5	3119 B8	3630 C4	6372 D5	9698 I3
340 C7	3120 B9	3631 C4	6415 F8	9699 H2
350 B6	3124 B7	3631 D5	6416 F8	9809 E9
351 B6	3125 C8	3632 B4	6417 F8	9810 D8
352 B6	3126 A7	3653 B4	6443 F8	9901 C2
366 C7	3127 B8	3654 D5	6447 G8	9902 C2
370 C5	3128 B6	3655 D6	6449 F8	9903 C2
371 C6	3135 D7	3656 D6	6451 G7	9904 C2
401 F8	3143 C7	3657 D5	6470 F9	9905 C2
402 F8	3151 E7	3658 D6	6470 F9	M1 H3
404 F7	3154 C7	3659 D6	6502 H7	M2 G2
405 E7	3156 D8	3660 B1	6503 H3	M3 A9
410 F8	3170 E7	3661 E4	6504 H3	M5 G7
415 F8	3171 D7	3662 D3	6505 H3	
444 F7	3173 D7	3664 E5	6516 H4	
442 F6	3182 C8	3665 E5	6521 F4	
443 E9	3183 C7	3666 C2	6530 G6	
444 G7	3184 C7	3667 E5	6540 F5	
445 G8	3185 C7	3669 E5	6602 C4	
446 G7	3189 E7	3670 E5	6603 D5	
448 H7	3190 B10	3671 E4	6604 C5	
449 H6	3192 C8	3672 E6	6605 D5	
450 G7	3192 C8	3673 E7	6658 D6	
451 G7	3194 A10	3674 E7	6663 B1	
453 F8	3194 B10	3676 E4	6679 E6	



DESCRIPCION

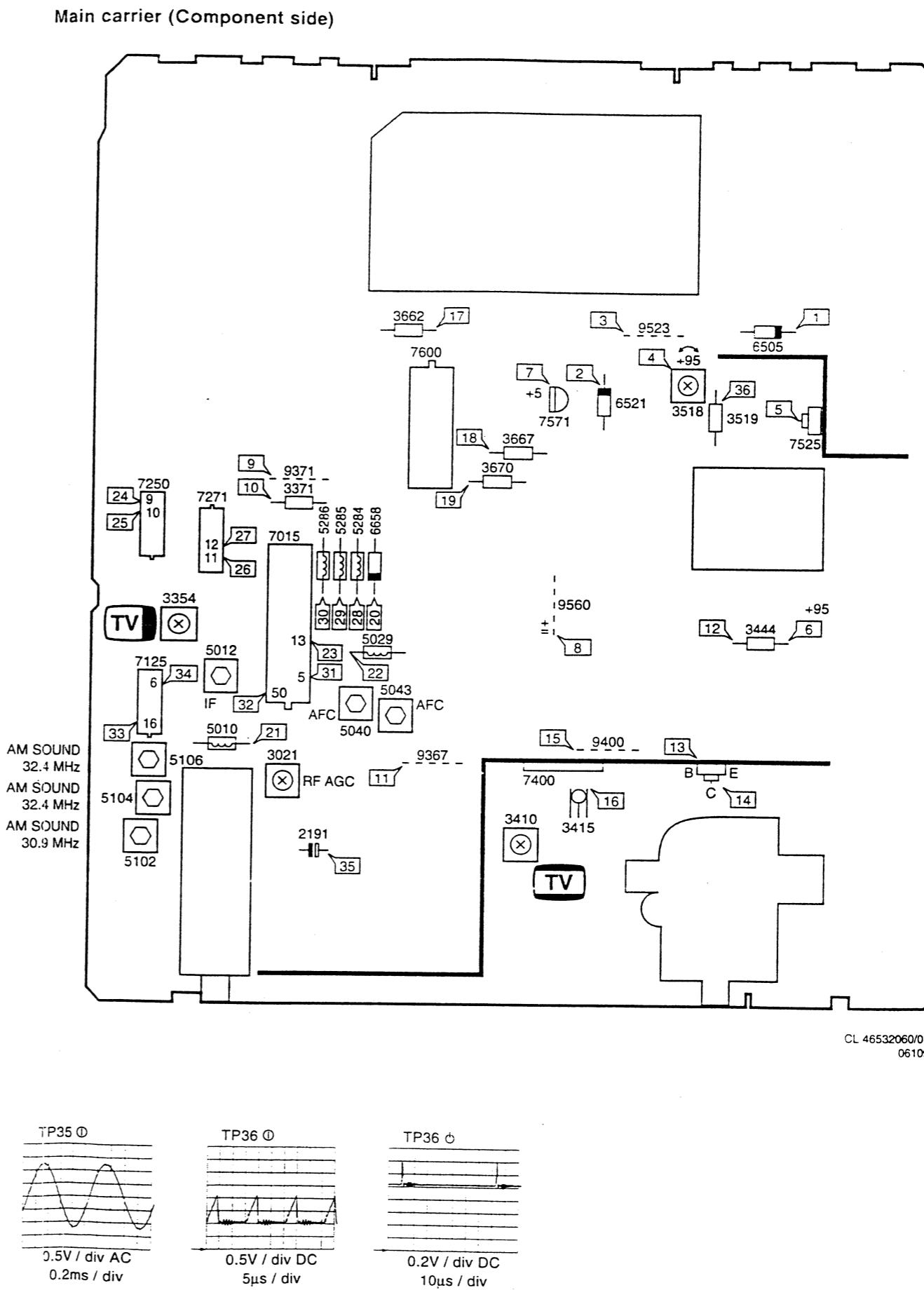
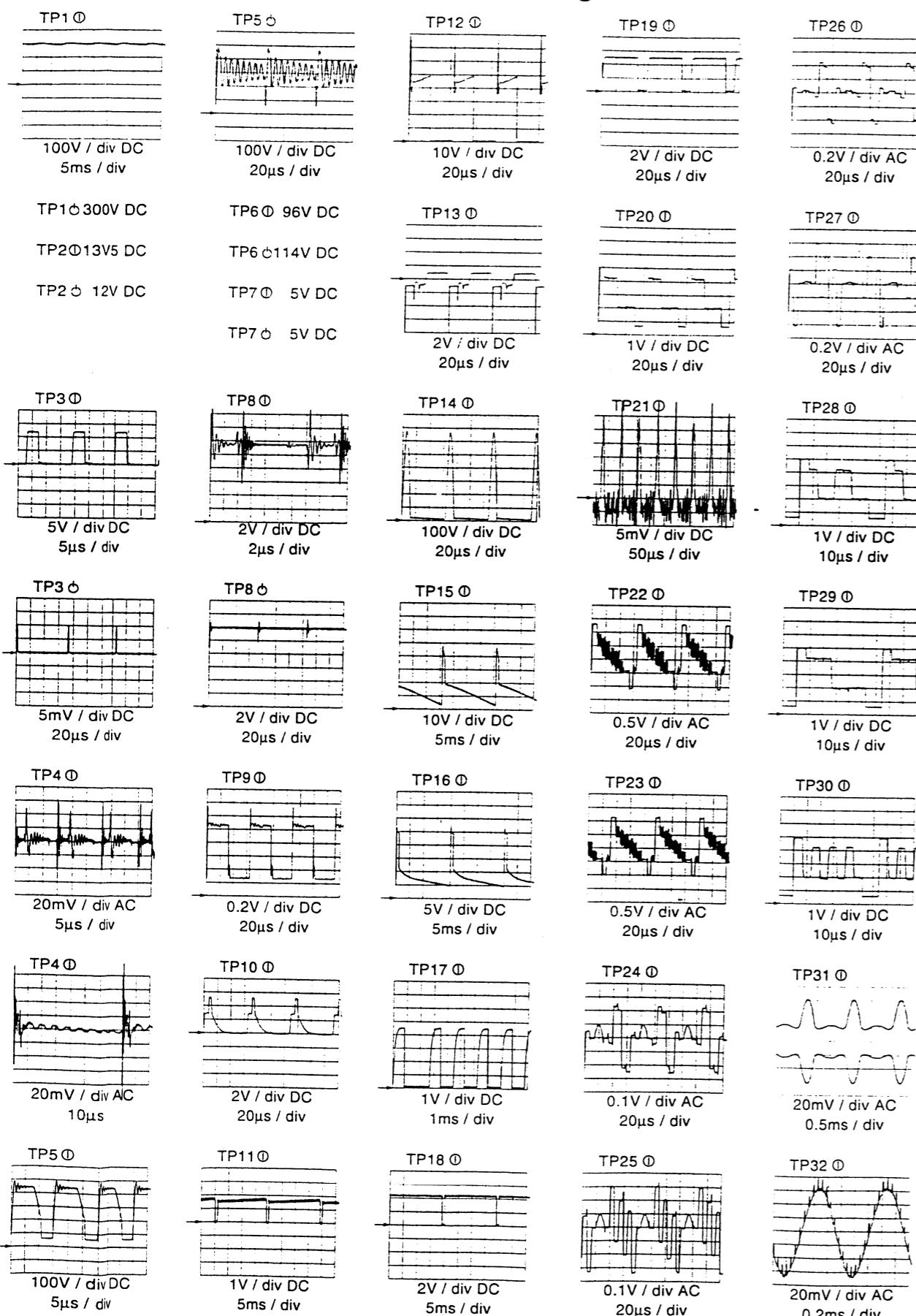
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 1

5. Overview oscillograms / Relación de oscilogramas / Rassegna oscillogrammi

CHASSIS CTT-H

Survey of testpoints / Puntos de prueba / Elenco punti di prova

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3. Safety instructions, maintenance instructions, warnings and notes

Safety Instructions for Repairs

1. Safety regulations require that during a repair:
 - the set should be connected to the mains via an isolating transformer
 - safety components, indicated by the symbol  , should be replaced by components identical to the original ones
 - when replacing the CRT, safety goggles must be worn.
2. Safety regulations require also that after a repair:
 - the set should be returned in its original condition
 - the cabinet should be checked for defects to avoid touching, by the customer, of inner parts
 - the insulation of the mains lead should be checked for external damage
 - the mains lead strain relief should be checked on its function
 - the cableform and EHT cable are routed correctly and fixed with the mounted cable clamps in order to avoid touching of the CRT, hot components or heat sinks
 - the electrical resistance between mains plug and the secondary side is checked. This check can be done as follows:
 - unplug the mains cord and connect a wire between the two pins of the mains plug
 - switch on the TV with the main switch
 - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between $4.5\text{ M}\Omega$ and $12\text{ M}\Omega$.
 - switch off the TV and remove the wire between the two pins of the mains plug
 - thermally loaded solder joints should be resoldered. This includes components like LOT, the line output transistor, fly-back capacitor.

Maintenance Instructions

It is recommended to have a maintenance inspection carried out periodically by a qualified service employee. The interval depends on the usage conditions.

- When the set is used in a living room the recommended interval is 3 to 5 years. When the set is used in the kitchen or garage this interval is 1 year.
- During the maintenance inspection the above mentioned "safety instructions for repair" should be carried out. The power supply and deflection circuitry on the chassis, the CRT panel and the neck of the CRT should be cleaned.

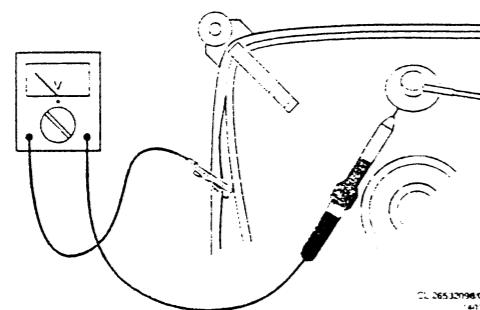


Fig. 3.1

Warnings

1. In order to prevent damage to IC's and transistors any flash-over of the EHT should be avoided. To prevent damage to the picture tube the method, indicated in Fig. 3.1, has to be applied to discharge the picture tube. Make use of an EHT probe and a universal meter (position DC-V). Discharge until the reading of the meter is 0V (after approx 30s).
2. **ESD** 

All IC's and many other semi-conductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools on the same potential.

3. Proceed with care when testing the EHT section and the picture tube.
4. Never replace any modules or any other parts while the set is switched on.
5. Use plastic instead of metal alignment tools. This will prevent any short circuits and the danger of a circuit becoming unstable.
6. Upon a repair of a transistor or an IC assembly (e.g. a transistor or IC with heatsink and spring) remounting should be carried out in the following order:
 1. Mount transistor or IC on heatsink with spring.
 2. Resolder the joints.

Notes

1. After replacing the microcomputer first solder the shielding before testing the set. This is needed as the shielding is used for earth connection. If this is not done the set can switch into protection mode (see description of the SMPS).
2. Do not use heatsinks as earth reference.
3. The direct voltages and waveforms should be measured relative to the nearest earthing point on the printed circuit board.
4. The direct voltages and waveforms are measured in the Service Default Mode (see chapter 8). Use a colour bar pattern of a pattern generator (e.g PM5518).
5. The DC voltages and oscilloscopes are where necessary measured with  and without  aerial signal (settings as in Service Default Mode: see chapter 8). Voltages and oscilloscopes in the power supply section have been measured for both normal operation () and in the stand-by mode (

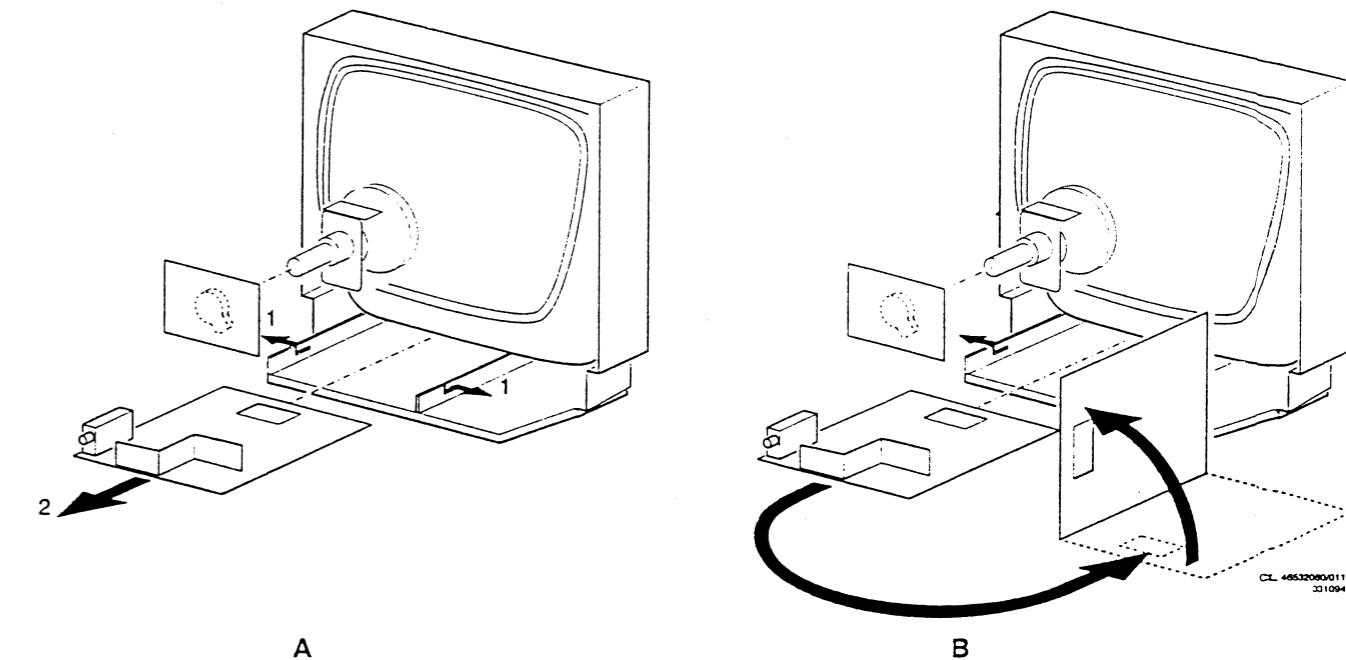
4. Mechanical instructions

For the main carrier two service positions are possible:

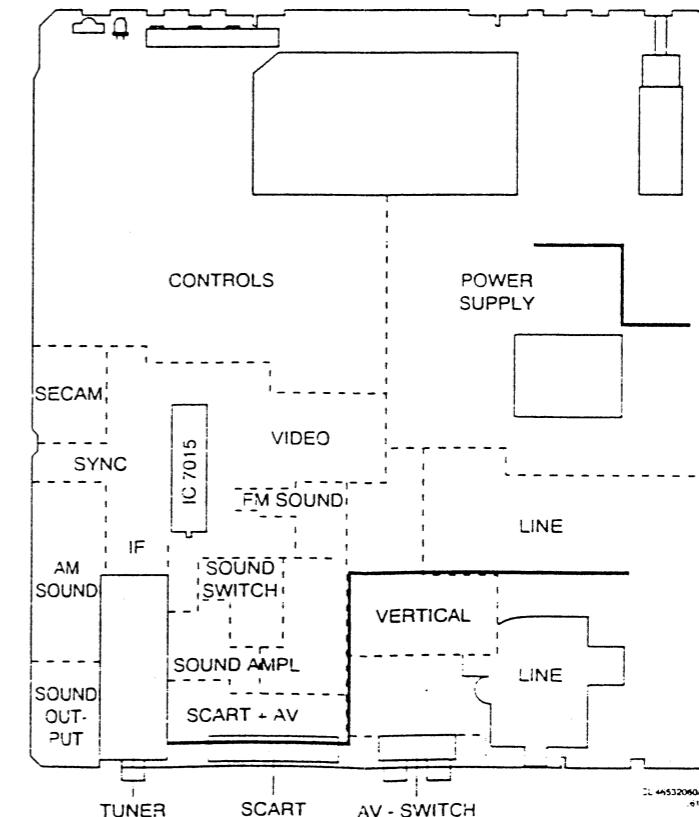
A: For faultfinding on the component side of the main carrier
B: For (de)soldering activities on the copper side of the main carrier

Position A can be reached by first removing the mains cord from its fixation, then loosen the carrier lips (1) and then pulling the carrier panel (2) for approximately 10 cm.

Position B can be reached from position A after disconnecting the degaussing cable. Put the carrier on the line transformer side.

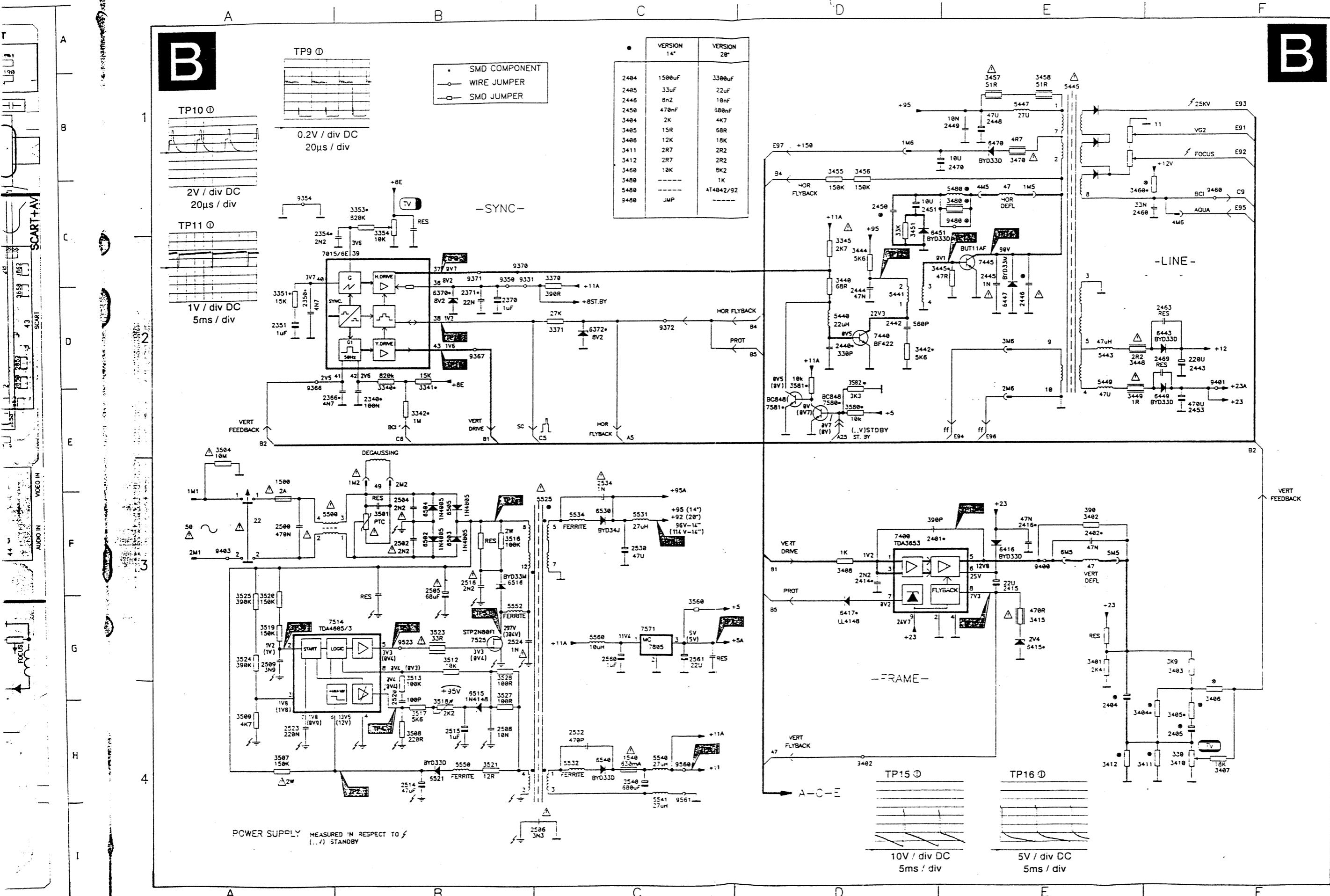


A



Functional block overview

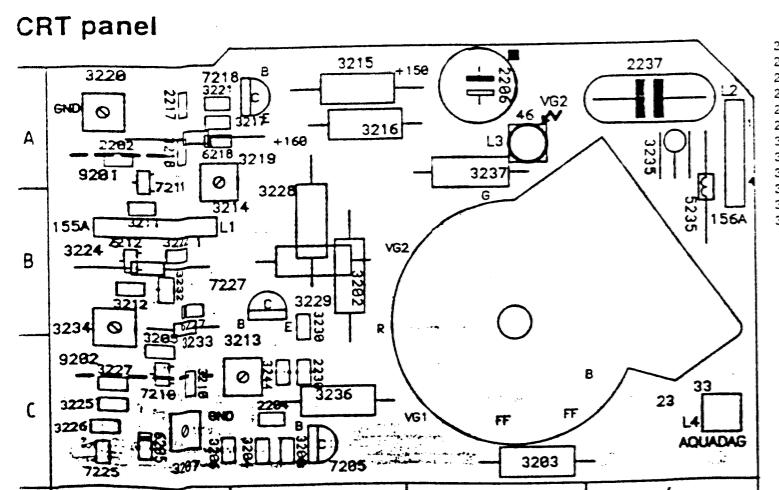
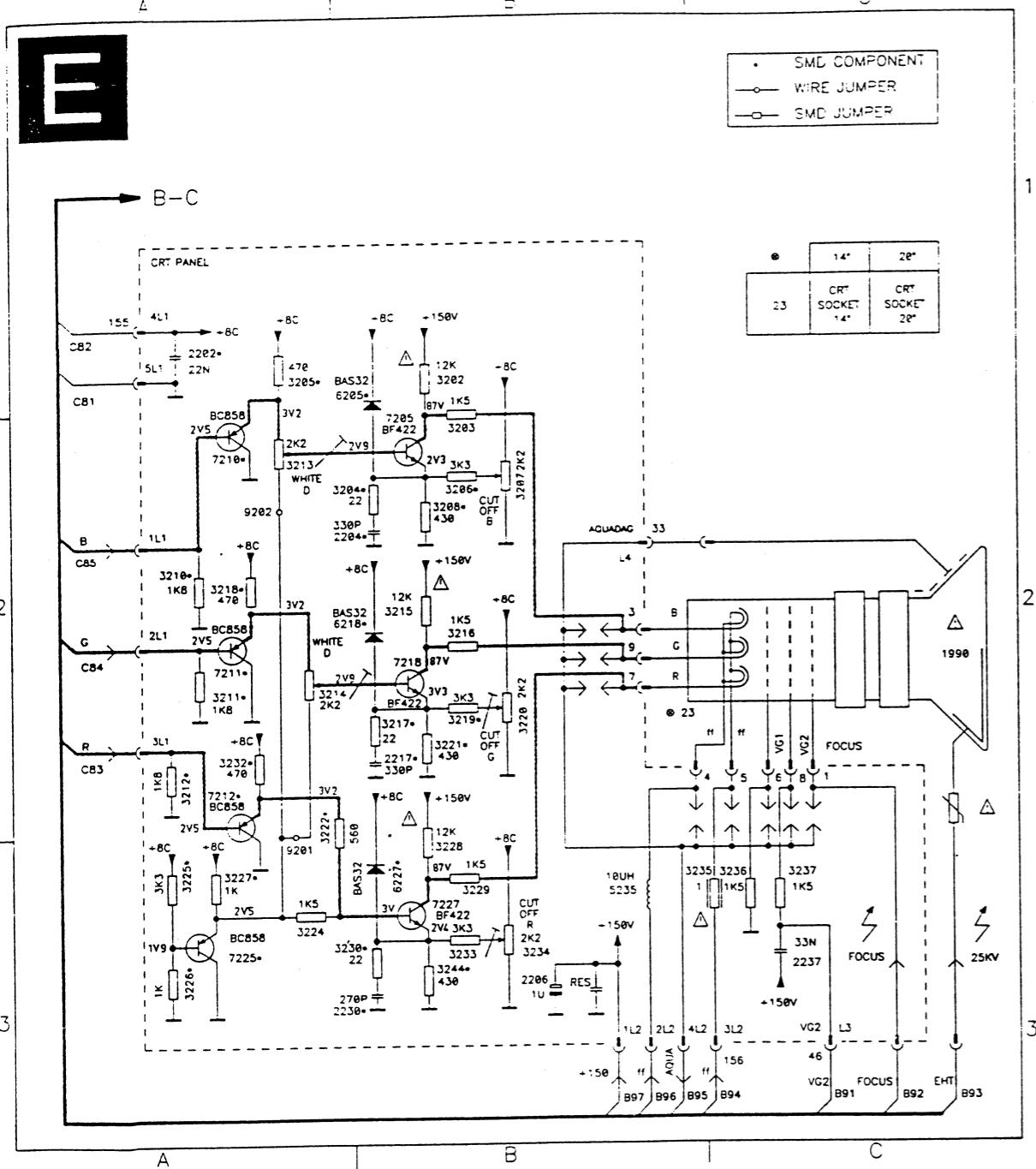
Power supply + Synchronisation + Deflection



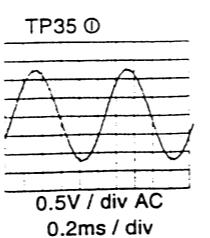
| | |
|----------|---------|
| 22 A3 | 6548 C4 |
| 47 E1/E3 | 7400 D3 |
| 49 B3 | 7444 D2 |
| 50 A3 | 7445 E2 |
| 1500 A3 | 7514 AJ |
| 1540 C3 | 7525 BJ |
| 2340 B2 | 7571 CJ |
| 2350 B2 | 7586 CJ |
| 2351 A2 | 7581 CJ |
| 2356 B2 | 9333 B2 |
| 2379 B2 | 9358 B2 |
| 2371 B2 | 9386 E1 |
| 2481 D3 | 9387 B2 |
| 2482 E3 | 9370 B2 |
| 2484 E4 | 9371 B2 |
| 2485 F4 | 9372 C2 |
| 2414 D2 | 9400 E3 |
| 2415 E2 | 9481 F2 |
| 2416 D2 | 9482 D4 |
| 2442 D2 | 9469 AJ |
| 2443 F2 | 9469 E1 |
| 2444 D2 | 9568 C4 |
| 2445 E2 | 9561 C4 |
| 2466 E2 | |
| 2448 E1 | |
| 2449 E1 | |
| 2450 D1 | |
| 2451 D1 | |
| 2452 F3 | |
| 2468 F1 | |
| 2463 F2 | |
| 2469 F2 | |
| 2470 E3 | |
| 2500 A3 | |
| 2582 B3 | |
| 2584 B3 | |
| 2585 B3 | |
| 2586 B3 | |
| 2587 B3 | |
| 2588 B3 | |
| 2589 B3 | |
| 2514 B4 | |
| 2515 B3 | |
| 2520 B4 | |
| 2523 A4 | |
| 2524 B3 | |
| 2539 C3 | |
| 2532 C4 | |
| 2533 C3 | |
| 2548 C4 | |
| 2569 C3 | |
| 2561 C3 | |
| 3348 B2 | |
| 3341 B2 | |
| 3342 B2 | |
| 3345 D2 | |
| 3351 A2 | |
| 3352 E1 | |
| 3379 G2 | |
| 3371 G2 | |
| 3491 E3 | |
| 3482 E3 | |
| 3483 F3 | |
| 3484 F4 | |
| 3485 F4 | |
| 3486 F4 | |
| 3487 F3 | |
| 3419 F4 | |
| 3411 F4 | |
| 3412 E4 | |
| 3415 E3 | |
| 3440 D2 | |
| 3442 D2 | |
| 3444 D2 | |
| 3445 E2 | |
| 3448 E2 | |
| 3451 D2 | |
| 3455 D1 | |
| 3457 E1 | |
| 3458 E1 | |
| 3460 F1 | |
| 3470 E1 | |
| 3480 E1 | |
| 3581 B3 | |
| 3582 B3 | |
| 3587 A3 | |
| 3588 B3 | |
| 3589 A3 | |
| 3528 A3 | |
| 3523 B4 | |
| 3523 B3 | |
| 3524 A3 | |
| 3525 A3 | |
| 3527 B4 | |
| 3528 B4 | |
| 3560 C3 | |
| 3589 C3 | |
| 3590 C3 | |
| 3591 C3 | |
| 3592 C3 | |
| 3441 E2 | |
| 3443 E2 | |
| 3445 E1 | |
| 3447 E1 | |
| 3449 E2 | |
| 3480 E1 | |
| 5566 A3 | |
| 5525 C3 | |
| 5531 C3 | |
| 5532 C4 | |
| 5533 C4 | |
| 5548 C4 | |
| 5541 C4 | |
| 5550 B4 | |
| 5552 B4 | |
| 5568 C3 | |
| 3570 B2 | |
| 3572 C2 | |
| 3415 E3 | |
| 3416 E3 | |
| 6443 E2 | |
| 6443 E2 | |
| 6447 E2 | |
| 6449 E2 | |
| 5451 C2 | |
| 5470 C2 | |
| 5592 B3 | |
| 5593 B3 | |
| 5584 B3 | |
| 5595 B3 | |
| 5596 B3 | |
| 5519 B3 | |
| 5521 B3 | |
| 6330 C3 | |

CRT panel / Panel CRT / Pannello CRT

Sou



| | | | | | | | | | |
|-----|----|------|----|------|----|------|----|------|----|
| 202 | A1 | 3208 | C2 | 3221 | A1 | 3236 | C2 | 7212 | B1 |
| 204 | C2 | 3210 | C1 | 3222 | B1 | 3236 | C2 | 7218 | A2 |
| 206 | A3 | 3211 | B1 | 3224 | B1 | 3237 | A3 | 7255 | C1 |
| 217 | A1 | 3212 | B1 | 3225 | C1 | 3244 | C2 | 7227 | B2 |
| 230 | C2 | 3213 | C2 | 3226 | C1 | 3293 | B1 | 9201 | A1 |
| 237 | A4 | 3214 | A1 | 3227 | C1 | 5235 | B4 | 9202 | C1 |
| 202 | B2 | 3215 | A2 | 3228 | B2 | 6205 | C1 | L1 | |
| 203 | C3 | 3216 | A2 | 3229 | B2 | 6218 | A1 | L2 | A4 |
| 204 | C2 | 3217 | A1 | 3230 | B2 | 6227 | B1 | L3 | A3 |
| 205 | C1 | 3218 | A1 | 3232 | B1 | 7205 | C2 | L4 | C4 |
| 206 | C1 | 3219 | A1 | 3234 | B1 | 7210 | C1 | | |
| 207 | C1 | 3220 | A1 | 3235 | A4 | 7211 | A1 | | |



I ISTRUZIONI ELETTRICHE

A. REGOLAZIONI SUL PANNELLO PRINCIPALE

1. Tensione di alimentazione +95 V

Collegare un voltmetro (DC) fra il +2530 e massa. Regolare con il potenziometro 3518 la tensione ad un valore di 95V per uno schermo da 14", 88V per uno schermo da 20" o 21".

2. Centraggio orizzontale

Da regolare con il potenziometro 3554.

3. Altezza dell'immagine

Da regolare con il potenziometro 3410.

4. Messa a fuoco

Da regolare con il potenziometro apposito nel trasformatore di linea.

5. CAF

Collegare un generatore di segnali (p.e. PM5326) come indicato nella Fig. 1 e regolare la sua frequenza a 38,9 MHz (PAL I: 39,5 MHz). Collegare un voltmetro sul perno 44 dell'IC7015:C e regolare la tensione con 5040 a 3,5V (CC).

6 C.A.G.-RF

Quando l'immagine di una potente transmittente locale risulta distorta, regolare il potenziometro 3021 finché l'inconveniente sia rimediato.

B. REGOLAZIONE SUL CIRCUITO STAMPATO DELLO ZOCCOLO PER IL CINESCOPIO

1. Punto di interdizione del cinescopio

Applicare in antenna un segnale di quadro bianco.

Collegare il perno 25 dell' IC7015:E a massa.

Regolare la luminosità in modo che sul potenziometro 3214 una tensione continua di 0 V sia presente.

Tramite i potenziometri 3234, 3207 e 3220 regolare il livello del nero sui collettori dei transistors 7227, 7205 e 7218 ad un valore di 125 V per uno schermo da 14" o 21", 130 V per uno schermo da 20".

Agire sul potenziometro Vg2 fino a quando la luce proveniente dal cannone che si illumina come primo non sia appena appena visible.

Regolare gli altri due cannoni con i loro comandi rispettivi (3234, 3207 o 3220) fino a quando la luce sparisce appena appena.

2. Scala dei grigi

Applicare in antenna il segnale campione e regolare normalmente i controlli del televisore.

Lasciare riscaldare l'apparecchio per almeno 10 minuti.

Regolare 3214 e 3213 finché si ottiene la desiderata scala dei grigi.

△ REGOLAZIONI DELL'IMMAGINE

Nota:

Le regolazioni di purezza colore e di convergenza qui descritte devono essere eseguite solo in caso di sostituzione del cinescopio o comunque se necessita una regolazione completa. In tutti gli altri casi anche in caso di sostituzione dell'unità di deflessione non è necessario rimuovere i cunei di gomma (G. di Fig. 3), in quanto è sufficiente l'unità multipolare per apportare piccole correzioni.

I. Purezza colore, Fig. 3

1. Allentare di alcuni giri la vite "F" di fissaggio del giogo di deflessione.
2. Muovere il giogo e togliere i tre cunei di gomma G.
3. Far slittare il giogo il più possibile contro l'ampolla del cinescopio ed avvitare la vite "F" in modo che il giogo si possa spostare con una certa frizione.
4. Posizionare l'unità multipolare come da figura, avvitare la vite "A" e ruotare in senso antiorario l'anello di sicurezza "B".
5. Posizionare il televisore col frontale verso EST o verso OVEST ed inserirlo.
6. Mettere in antenna un segnale di reticolo e portare al massimo la luminosità. Far riscaldare il televisore per circa 10 minuti.
7. Regolare la convergenza statica, usando le alette "C" e "D" (se necessario o consultare il capitolo II).
8. Interdire il cannone del verde e del blu scollegando rispettivamente le resistenze 3216 e 3203.
9. Ruotare gli anelli di purezza colore con le alette "E" in modo che la barra rossa verticale coincida il più possibile col centro dello schermo e nel contempo fare in modo che la linea centrale orizzontale sia più diritta possibile.
10. Inserire un segnale di quadro bianco e controllare che la barra rossa verticale sia sul centro dello schermo. Se ciò non è stato realizzato, inserire nuovamente un segnale di reticolo e spostare la barra rossa verticale nella giusta direzione facendo attenzione che l'immagine non si sposti molto di verticale.
11. Inserire il segnale di quadro bianco e spostare il giogo di deflessione fino a quando l'intero schermo sia uniformemente rosso.
12. Avvitare la vite "F".
13. Procedere alla regolazione della convergenza statica e dinamica.

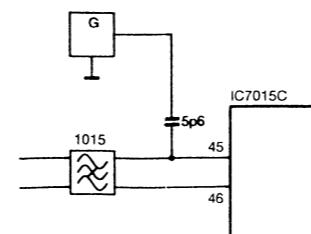


Fig. 1

II. Convergenza statica, vedere Fig. 3

1. Inserire un segnale di reticolo e lasciar riscaldare il televisore per circa 10 minuti.
2. Interdire il cannone del verde scollegando 3216 e ruotare l'anello di fissaggio "B" in senso antiorario.
3. Ruotare gli anelli magnetici a quattro polarità con le alette "C" in modo da sovrapporre i reticolli blu e rosso sul centro dello schermo.
4. Inserire il cannone del verde ed interdire il cannone del blu scollegando la resistenza 3203.
5. Ruotare gli anelli magnetici a 6 polarità con le alette "D" in modo da sovrapporre i reticolli rosso e verde sul centro dello schermo.
6. Inserire il cannone del blu e fissare l'unità multipolare con l'anello "B".

III. Convergenza dinamica

Nota:

La convergenza dinamica si ottiene spostando il giogo di deflessione in senso orizzontale e verticale. Per assicurare l'esatta posizione dell'unità di deflessione, tre cunei di gomma sono posti tra il vetro dell'ampolla del cinescopio ed il giogo stesso, come illustrato in Fig. 4a o 5d.

Due di questi cunei hanno uno spessore di 7 mm. Codice 4822 462 40356, l'altro ha uno spessore di 11 mm, numero di codice 4822 462 40357.

1. Controllare prima la purezza colore e la convergenza statica.
2. Inserire un segnale di reticolo ed interdire il cannone del verde scollegando la resistenza 3216.
3. Eliminare l'incrocio delle righe centrali orizzontali e verticali blu e rosse con uno spostamento verticale del giogo. Se la posizione del giogo è corretta, inserire il cuneo di gomma (1) in alto (Fig. 4a) o in basso (Fig. 5a) senza togliere la strisciata di carta.
4. L'inserzione del cuneo come da Fig. 4a va eseguita se il giogo è spostato verso l'alto, come da Fig. 5a se il giogo è spostato verso il basso.
5. Spostando il giogo in senso orizzontale si ottiene la sovrapposizione delle righe orizzontali rosse e blu nella parte superiore e inferiore dello schermo e delle righe verticali rosse e blu a sinistra e a destra.
6. Se la posizione del giogo è corretta, posizionare i cunei (2) e (3) togliendo la strisciata di carta, come indicato in Fig. 4b o 5b. Premere con decisione la parte adesiva di questi cunei contro il vetro del cinescopio.
7. Posizionare ora il cuneo (4) come in Fig. 4c o 5c e premere in modo che aderisca al cinescopio.
8. Togliere il cuneo (1) in modo da ottenere la situazione illustrata in Fig. 4d o 5d.
9. Inserire il cannone del verde.

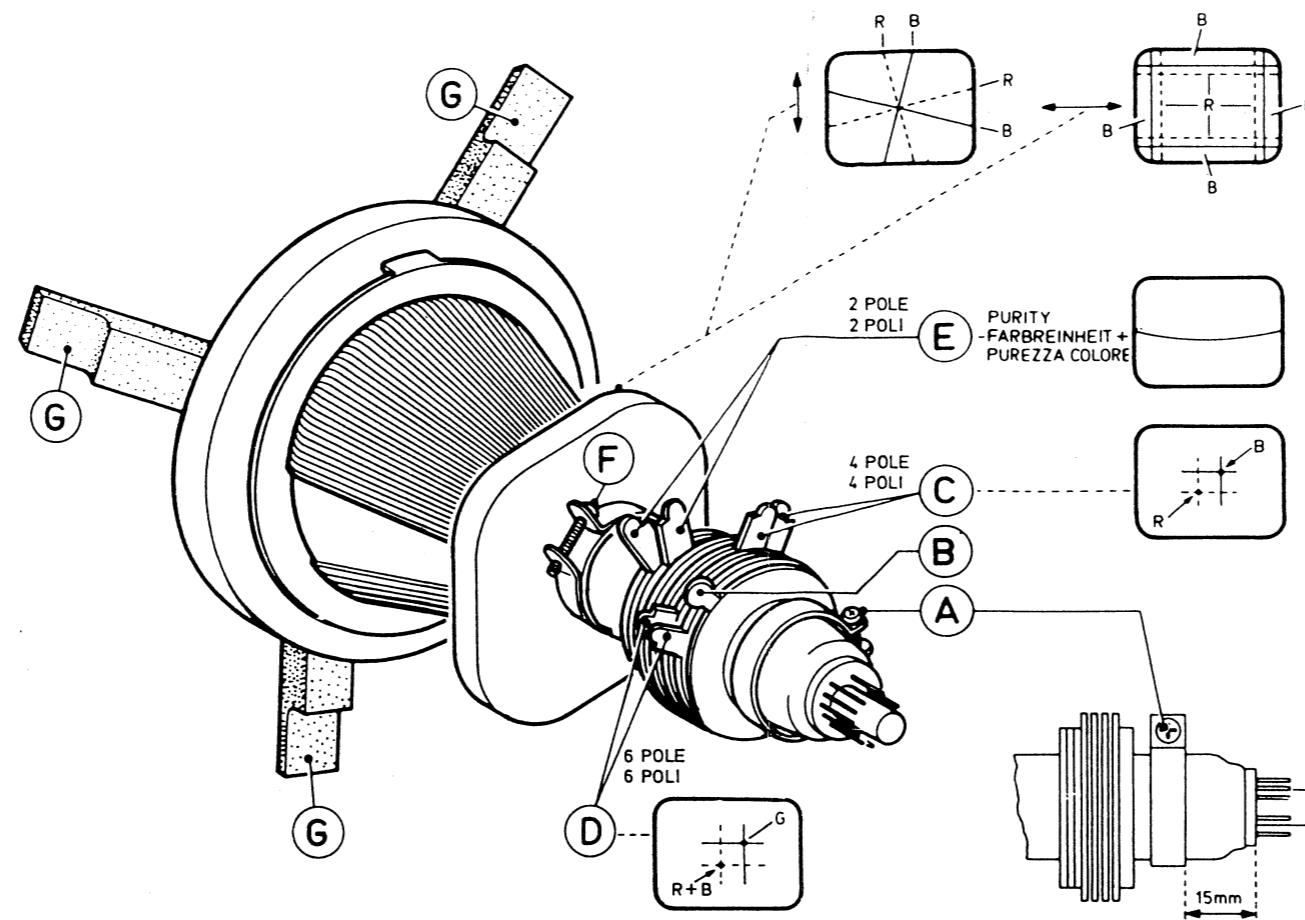


Fig. 3

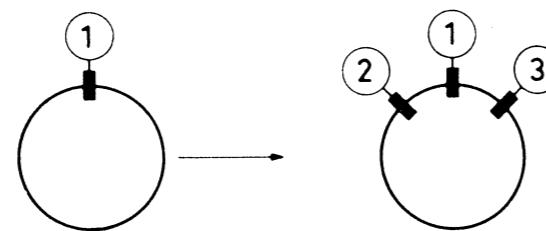


Fig. 4a

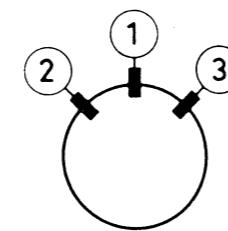


Fig. 4

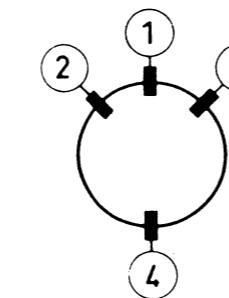


Fig. 4e

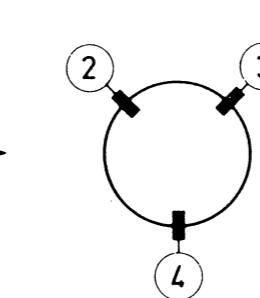


Fig. 4

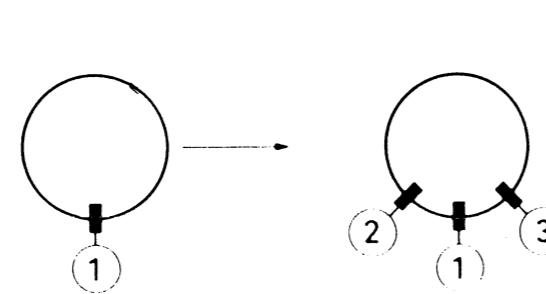


Fig. 5

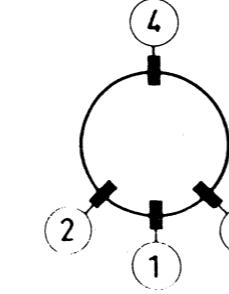
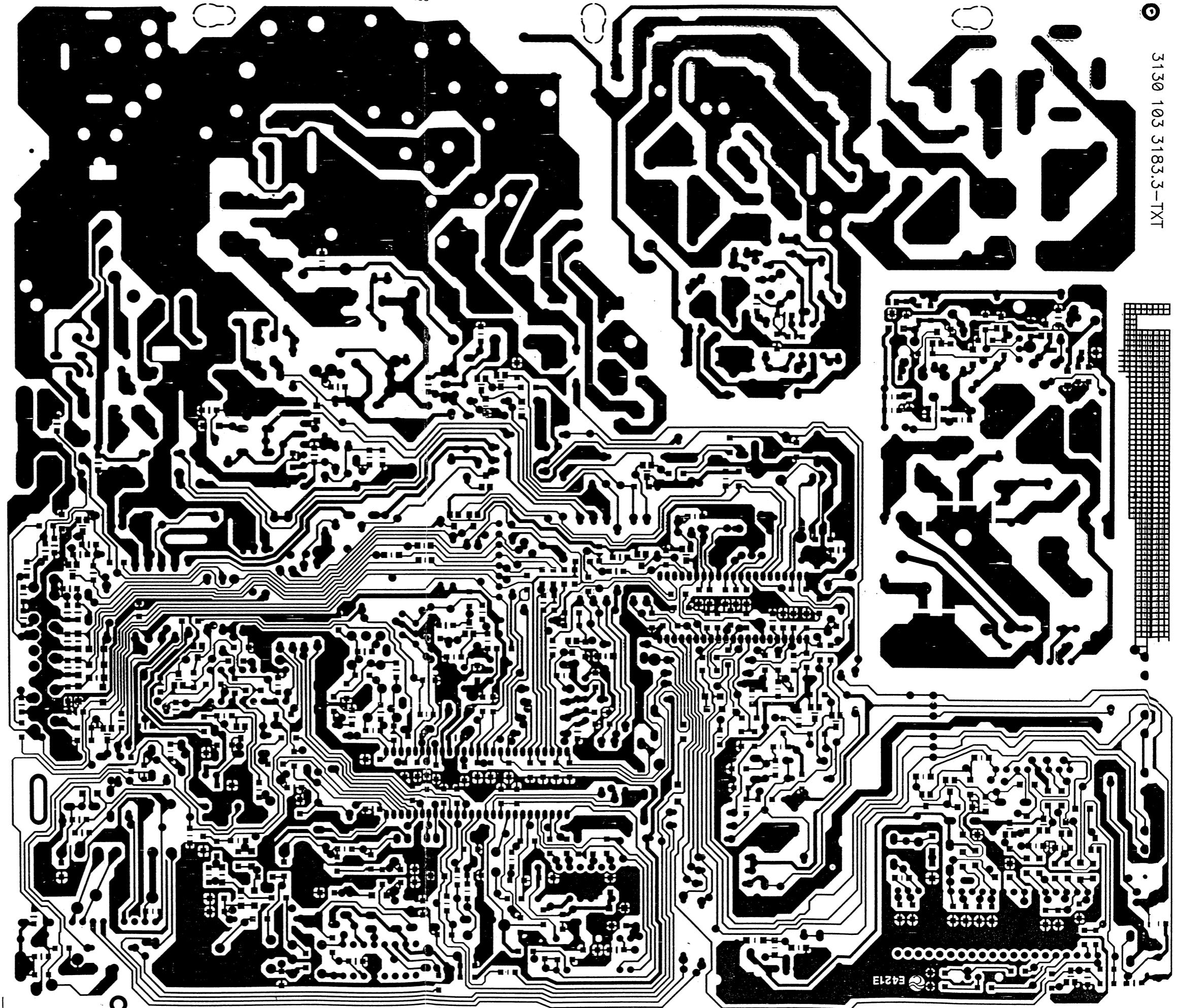
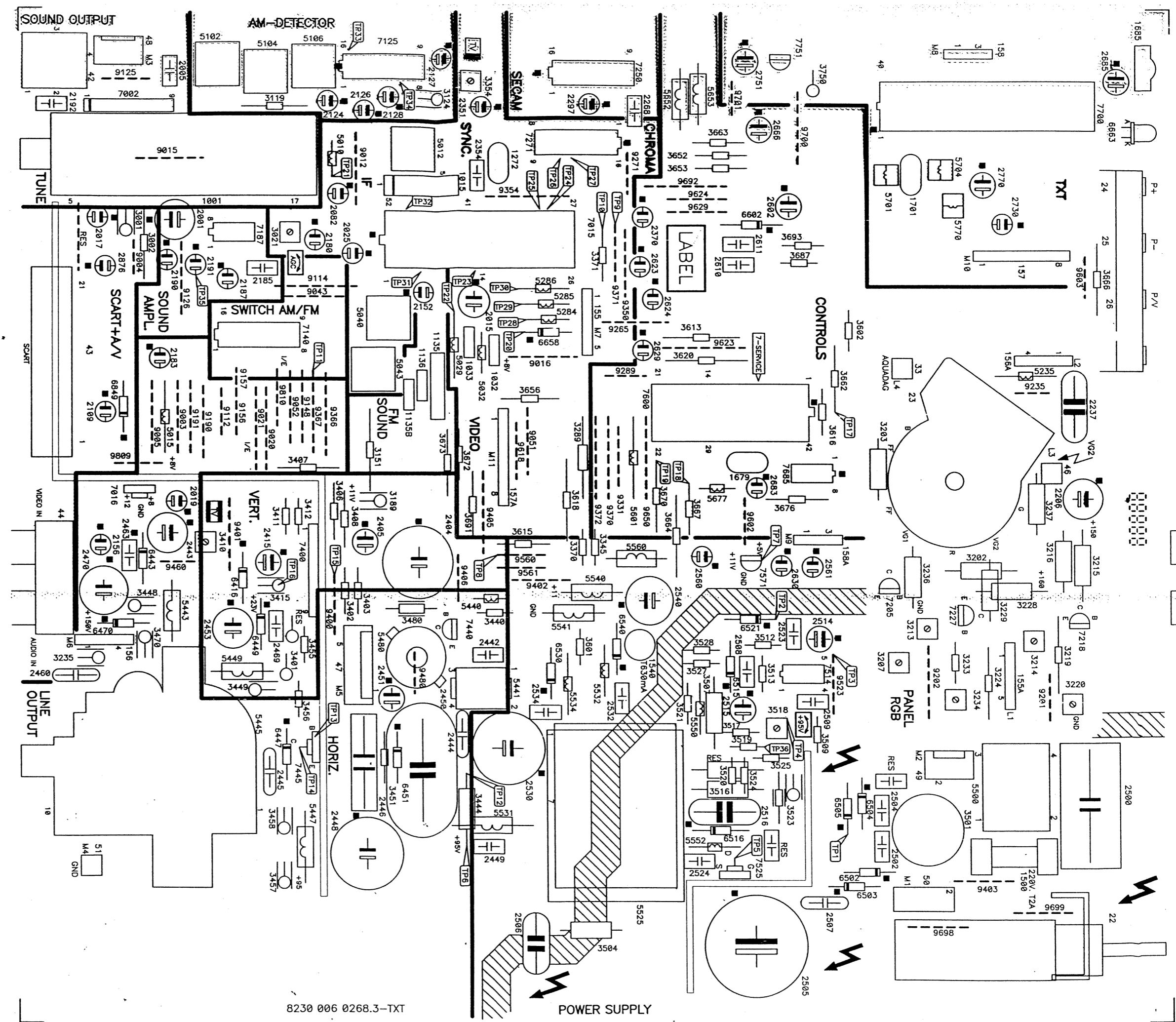


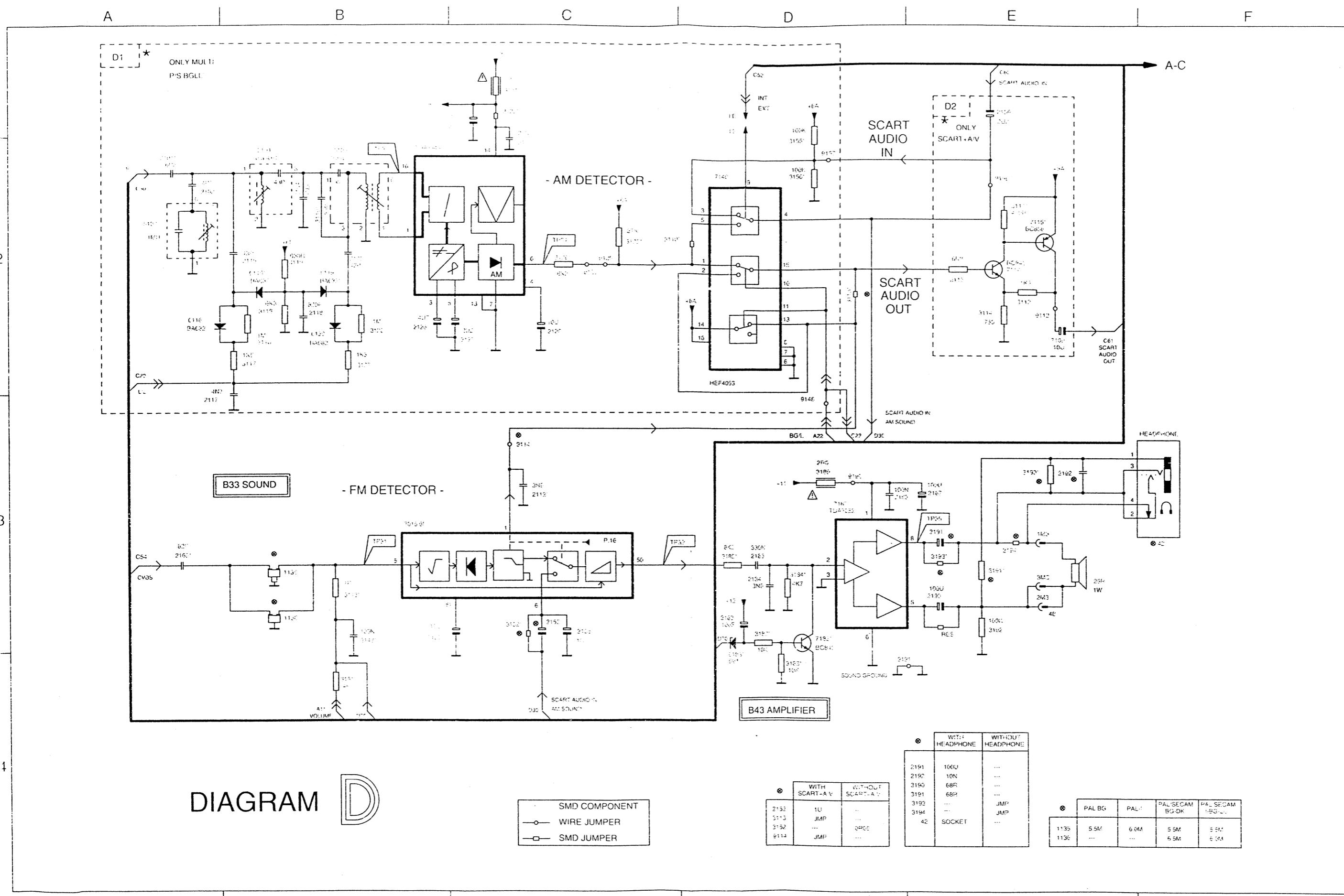
Fig. 5

3130 103 3183.3-TXT

8230 006 0265.3-TXT



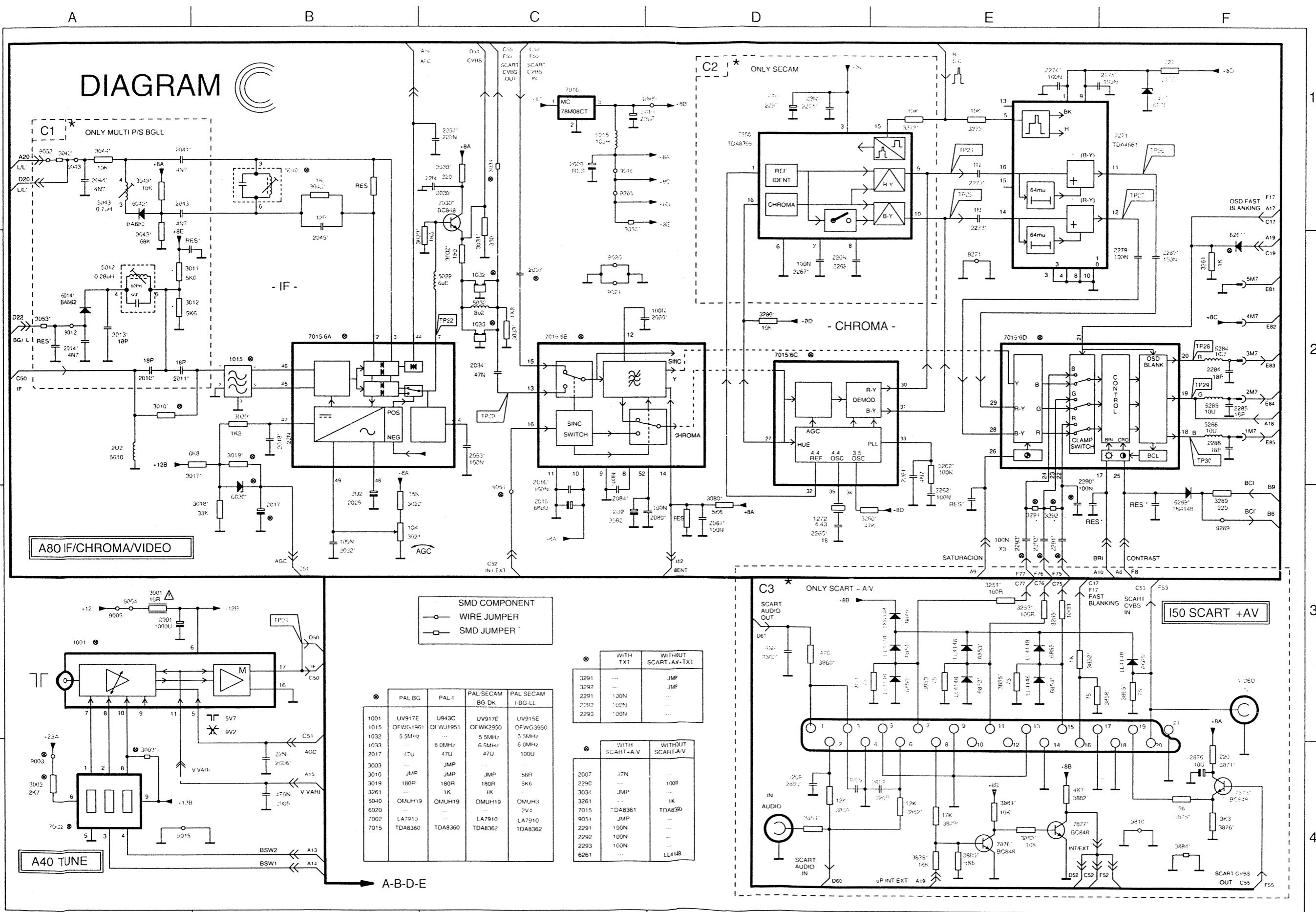




| | |
|------|----|
| 42 | E5 |
| 48 | E2 |
| 1139 | B5 |
| 1136 | B5 |
| 2101 | A2 |
| 2102 | A2 |
| 2104 | B2 |
| 2109 | E2 |
| 2110 | B2 |
| 2112 | C5 |
| 2115 | B2 |
| 2117 | B2 |
| 2118 | B2 |
| 2120 | B2 |
| 2124 | C1 |
| 2125 | C1 |
| 2126 | B2 |
| 2127 | C2 |
| 2128 | C2 |
| 2143 | B3 |
| 2152 | C3 |
| 2155 | C3 |
| 2156 | E1 |
| 2169 | A3 |
| 2180 | C5 |
| 2183 | D3 |
| 2184 | D3 |
| 2185 | D3 |
| 2187 | E3 |
| 2188 | E3 |
| 2190 | E3 |
| 2191 | E3 |
| 2192 | E3 |
| 3110 | D2 |
| 3111 | E2 |
| 3112 | E2 |
| 3113 | D2 |
| 3114 | E2 |
| 3115 | E2 |
| 3116 | B2 |
| 3117 | B2 |
| 3118 | B1 |
| 3119 | B2 |
| 3120 | B2 |
| 3124 | C1 |
| 3125 | C2 |
| 3126 | C2 |
| 3127 | B2 |
| 3128 | C1 |
| 3143 | B4 |
| 3151 | B4 |
| 3152 | C3 |
| 3155 | D1 |
| 3156 | D1 |
| 3182 | D1 |
| 3183 | D4 |
| 3184 | D5 |
| 3185 | D5 |
| 3189 | D3 |
| 3190 | E3 |
| 3191 | E3 |
| 3192 | E3 |
| 3193 | E3 |
| 3194 | E3 |
| 3195 | E3 |
| 5102 | A2 |
| 5104 | B2 |
| 5105 | B2 |
| 6115 | B2 |
| 6116 | A2 |
| 6119 | B2 |
| 6120 | B2 |
| 6163 | D3 |
| 7015 | C3 |
| 7114 | E2 |
| 7115 | E2 |
| 7125 | C2 |
| 7140 | D2 |
| 7183 | D2 |
| 7187 | D3 |
| 9112 | E2 |
| 9114 | C3 |
| 9125 | C2 |
| 9126 | C2 |
| 9148 | D3 |
| 9156 | E2 |
| 9157 | D2 |
| 9199 | E3 |

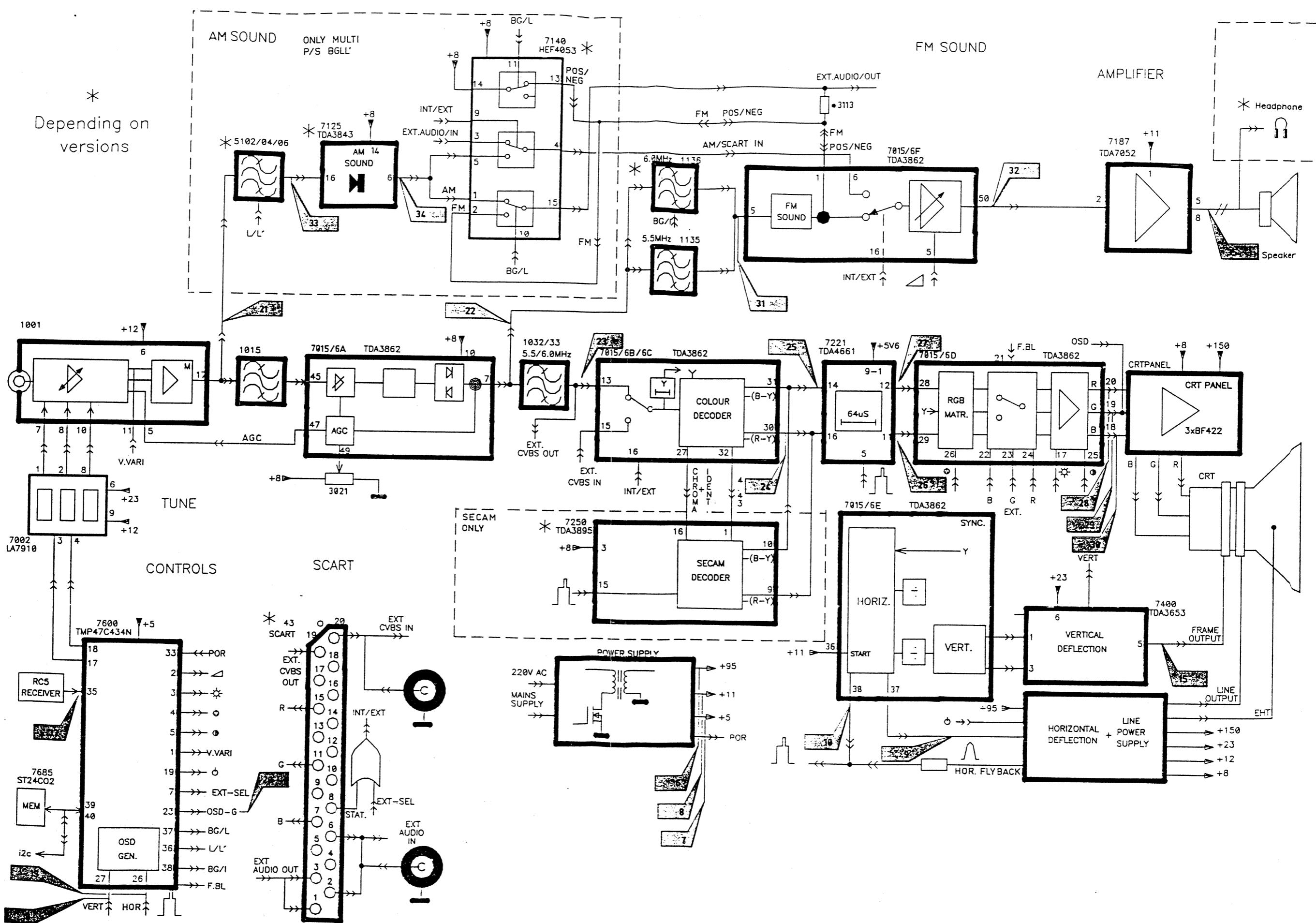
DIAGRAM D

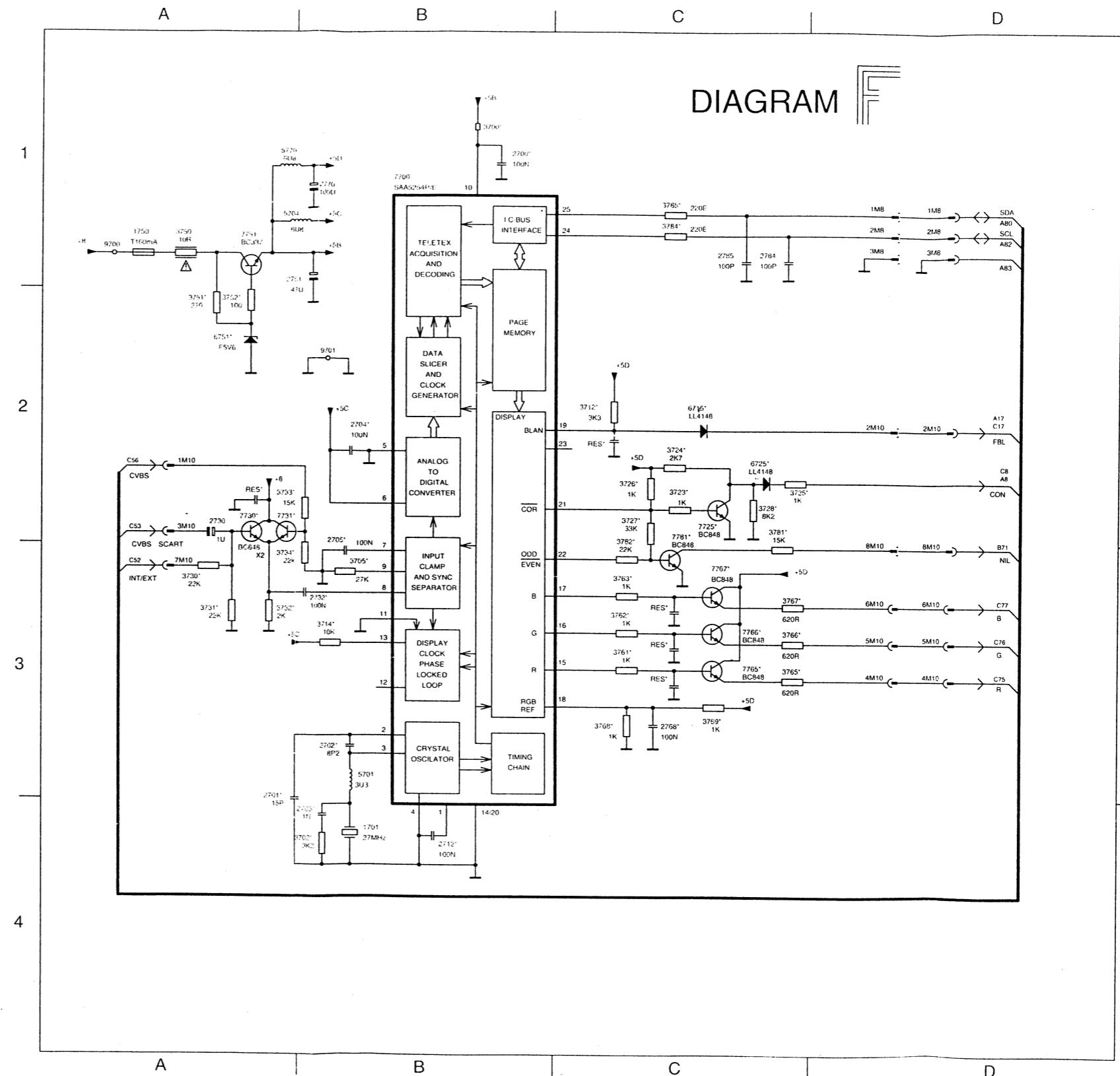
SMD COMPONENT
WIRE JUMPER
SMD JUMPER



Block diagram / Diagrama de bloques /

*
Depending on
versions





| | |
|------|----|
| 1701 | B4 |
| 2700 | B1 |
| 2701 | B3 |
| 2702 | B3 |
| 2703 | B4 |
| 2704 | B2 |
| 2705 | B5 |
| 2712 | B4 |
| 2720 | A2 |
| 2723 | B3 |
| 2751 | B1 |
| 2768 | C3 |
| 2770 | B1 |
| 2785 | D1 |
| 2786 | D1 |
| 3700 | B1 |
| 3702 | B4 |
| 3705 | B3 |
| 3712 | C2 |
| 3713 | B3 |
| 3720 | B1 |
| 3724 | C2 |
| 3725 | C2 |
| 3726 | C2 |
| 3727 | C2 |
| 3728 | C2 |
| 3731 | A3 |
| 3732 | A3 |
| 3733 | B2 |
| 3734 | B3 |
| 3750 | A1 |
| 3751 | A2 |
| 3761 | C3 |
| 3762 | C3 |
| 3763 | C3 |
| 3765 | C3 |
| 3766 | C3 |
| 3767 | C3 |
| 3768 | C3 |
| 3769 | C3 |
| 3781 | C3 |
| 3782 | C3 |
| 3784 | C1 |
| 3785 | C1 |
| 3786 | C1 |
| 3794 | A1 |
| 5770 | A1 |
| 5770 | A1 |
| 6715 | C2 |
| 6725 | C2 |
| 5751 | A2 |
| 7707 | B1 |
| 7708 | B2 |
| 7723 | A2 |
| 7731 | A2 |
| 7751 | A1 |
| 7765 | C3 |
| 7766 | C3 |
| 7767 | C3 |
| 7768 | C3 |
| 7770 | A1 |
| 7770 | B2 |